Private and Public Sports Venue Development Dilemmas: Economic Geography, Sport Venue Development, and Public Finance

by

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ABSTRACT

Sport venues for professional teams in North America have drawn substantial attention from academicians, elected officials, and taxpayers across more than 50 years. That focus is a result of the cultural significance of sport and the magnitude of the public sector's investment in the venues used by professional sport franchises since the 1950s. Franchise owners have a clear interest in securing subsidies for venues that offer enhanced amenities that produce new and more revenue streams. In the absence of public sector investment, a new or renovated arena, ballpark, or stadium would cost an owner more money. With regard to the public sector's interests in these investments and venues, several unresolved questions frame the political discourse that defined this dissertation.

The primary purpose of this three-paper dissertation is to study the economics of venue investment and development and broaden the current literature on stadium finance and public policy. Each of the three studies provide new insights related to existing theory, confirm previously proposed arguments, and propose new methods to examine the finances of professional sport venues. The first study is a spatial analysis of the distribution of professional sport franchises in the United States, critically examining the impact of the monopolies on the geographical distribution. The second study analyzes attendance in English soccer, particularly the duration of the statistical association between increased attendance and new stadiums. The final study examines public policy, public finance and urban planning theories associated with sport venue finance and development. The methodologies include quantitative analyses using instrumental-variable models with data for five census periods, panel ordinary least squared and Tobit models

using attendance and club level fixed and random effects, and an extensive survey of existing literature and categorization.

Based on the quantitative and qualitative analyses in my research – which enhances previous descriptive assessments of the existence of cartel control – I conclude and corroborate important evidence of anti-market behavior. The models presented detail the monopolistic structure of the North American professional sport leagues and their policies significantly affects where franchises are located. The leagues' actions create the market-failure that leads to the provision of public subsidies to attract and retain teams. It is apparent that markets robust enough to support a franchise do not have one in a concerted effort to ensure that franchises receive subsidies. Such markets without franchises have been used as leverage by franchise owners to obtain public incentives. Because of the monopolies, it also appears that the long-term effect of new facilities on attendance and economic activity is different compared to levels in English soccer that includes promotion and relegation. The duration of the association between the new stadiums and attendance was significantly longer in English soccer than the "honeymoon" in North American sports. As I revealed in the third study in the dissertation, despite the criticism against the allocation of public resources and incentives, since 2010 the public sector provided more than five billion USD to support the development of professional sport venues. Public incentives are unlikely to change; therefore, I propose that the analysis of sport related projects should focus on more recent urban development and governance theories as opposed to neoclassical public finance ones.

There are several future research possibilities stemmed from my studies, including analyzing the spatial distribution of professional sports with data that includes economic variables such as firms, and evaluating the optimal number of franchises and their locations. Additional studies should examine attendance trends and their association with new stadiums in other leagues outside

of North American, offering additional perspectives on the behavior within different leagues that include promotion and relegation. Finally, I propose that future studies should examine the development and finance of sport facilities with a more extensive analysis of urban studies theories including urban entrepreneurialism, municipal capitalism, and performance and conformance.

Chapter 1. Introduction

"If you build it [they] he will come"

(*Field of Dreams*, 1989 film)

Sport venues for professional teams in North America have drawn substantial attention from academicians (particularly since Noll's seminal study in 1974), elected officials, and taxpayers across the 70 years of investments by state and local governments in the venues used by professional teams. This interest is a function of the cultural significance of sport and the control of the supply of teams by the major sport leagues despite increasing demand from the residents of regions without teams. Team owners have a clear monetary interest in securing a subsidy for a venue that offers more revenue streams. In the absence of a public sector investment, it would cost an owner more for the venue. With regard to the public sector's interests, several unresolved questions frame the political discourse, some of which may never be fully resolved, bar any controversial circumstances revealing new truths. Among those that scholars frequently ask are:

- Is there any justification for any public sector investment in a sport venue used by privately owned teams?
- Do facilities used by privately owned professional teams contribute to a region's package of amenities or its publicly proclaimed policy objectives? Would either benefit justify the public sector's investment in the venue? If there are public benefits, does that mean venues can be considered public or merit goods?

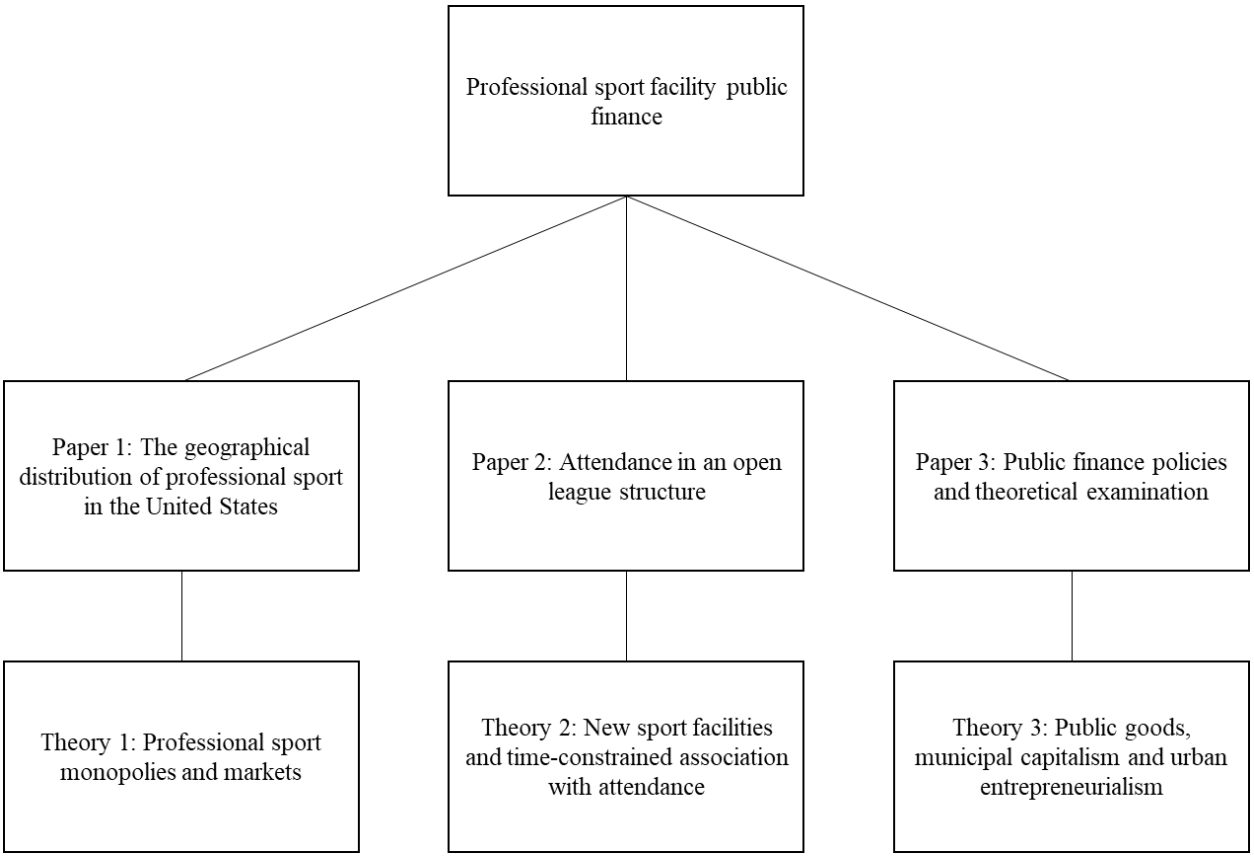
- What are the positive spatial effects from a venue and a team's presence in a particular city, and what is their net value?
- Should sport venue assets be treated similarly to any other recreational facility such museums and libraries?
- Finally, the US government already offered all sport leagues exemptions from anti-trust laws and Canadian laws has territorial exclusivity clauses in the NHL by-laws. These protections permit the leagues to restrict the supply of franchises and set prices independent of the fear of competition (from other sport leagues). Should the public sector offer additional subsidies too?

The three studies that comprise this dissertation offer unique insights into subjects that while part of a robust literature, could benefit from the approaches and perspectives that define this dissertation. The first paper assesses the impact of the cartel-status and under-supply of the professional leagues on regions in the United States from an economic geography perspective. There is a unique effort to provide a quantitative measurement of the extent to which anti-market or anti-competitive activity exists. This paper offers an analysis using Geographical Information Systems (GIS) and statistics. The second paper assess the effect of new venues in an open league structure. Studies of this topic focused primarily on North American leagues where relegation is not a relevant factor. The third paper returns to the basic issue of public investments in sport venues by presenting a framework that may offer a framework that is more useful than public goods theory in explaining the observed interest of governments to invest in these assets.

These papers address voids in the literature also strive to serve elected officials and taxpayers given (1) the sustained interest of cities in hosting teams and (2) owners' need or preference for new venues with the ability to tap into emerging revenue streams. Since 2010, I

estimate that the public sector's investment in sport venues exceeded six billion dollars. This insatiable appetite suggests different perspectives on what can be described as "the stadium mess" is of value to social scientists, taxpayers, and public officials. The overarching theme of this dissertation is the debate on publicly financed sport facilities anchored in Roger Noll's (1974) seminal study. Each of the studies provides a different perspective on sport venue finance and economics (Figure 1.1).

Figure 1-1: Dissertation structure and research paper general topics and theories



1.1 Research questions

Each of the papers answer different research questions consistently discussing questions related to public policy issues and the value of sport facilities to the public and private sectors. The three primary questions are as follows:

Paper 1: How does the cartel structure of North American Leagues (MLB, NFL, NHL, and NBA) affect the geographical distribution of professional sport franchises in the United States?

Hypothesis 1: Spatial analysis of professional sports reveals that markets that appear to have the characteristics of an adequate sport market accentuate the North American monopolistic structure.

Paper 2: How does the association between new stadiums and attendance differ between the cartel North American leagues and the English open-league system?

Hypothesis 2: The duration of the statistical association between increased attendance at sporting events and new facilities in a league with promotion and relegation is longer than the association in the North American closed leagues and the "honeymoon effect".

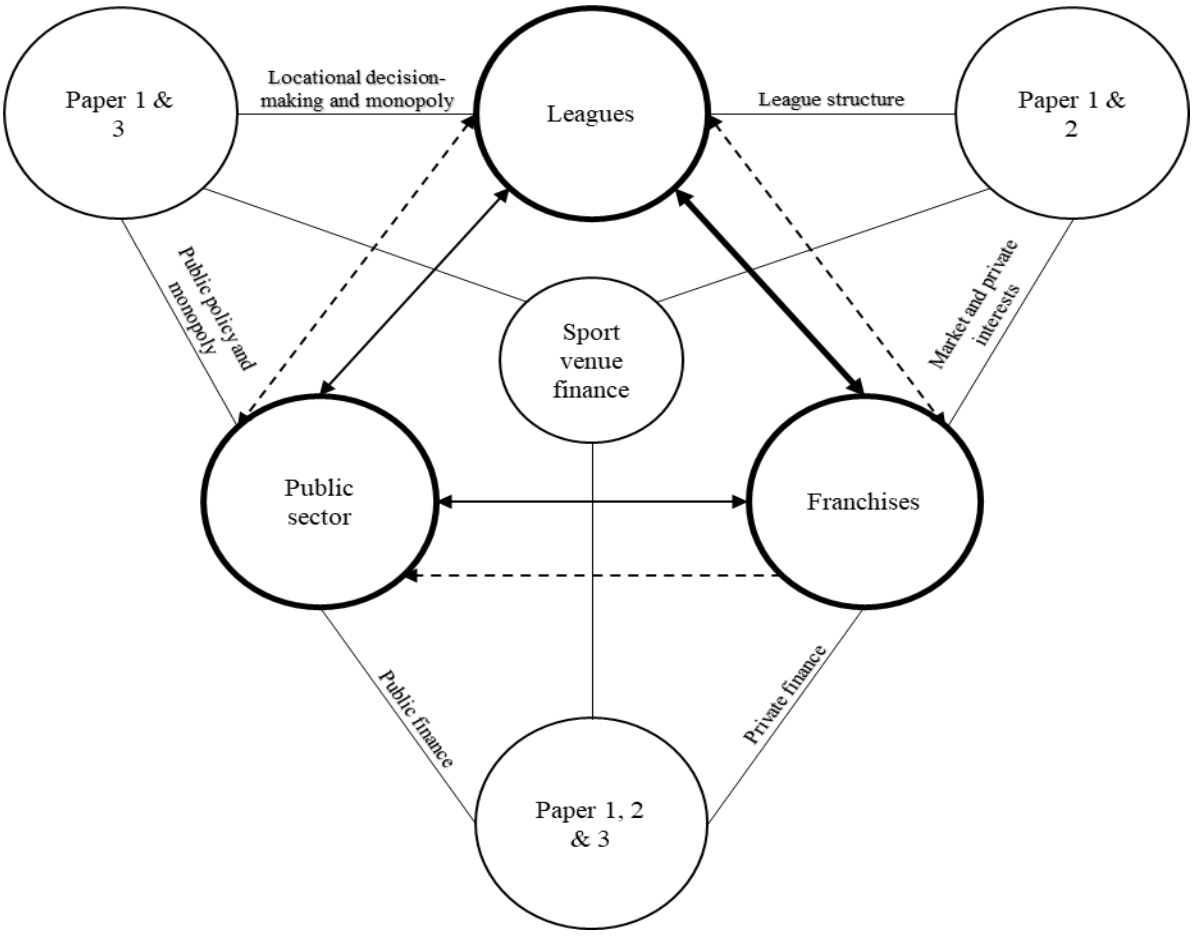
Paper 3: What role do municipal capitalism and urban entrepreneurialism play in the continuous allocation of public resources for privately used sport facilities?

Hypothesis 3: Municipal capitalism and urban entrepreneurialism are more adequate theories than public goods theory and the provision of merit goods to examine why and how cities invest in professional sport venues, and if the outcomes meet the expectations.

In the first paper, I model the relationship between the three primary agents in the North American sport development and public finance discussion. The agents are the leagues, the franchises that play in the leagues, and the public sector. My three papers address this relationship, each discussing one or more of the agents, and the relationships between them. My dissertation's conceptual model (Figure 1.2) is an extension of the model in the first paper. The model describes the relationship between the three primary actors, the leagues, the franchises, and the public sector, and depicts how each of the studies discuss the components that formulate this "pyramid". The leagues are at the top of the original pyramid, controlling the number of franchises and franchise

locations. The leagues have a strong relationship with individual owners that collectively and individually are integral decision-makers. However, franchise owners cannot relocate to different markets without the consent of the league and other franchise owners. The public sector's control often depends on their willingness and ability to use public incentives to attract or maintain a franchise, but the locational decision-making is ultimately in the hands of the leagues and the other owners.

Figure 1-2: Conceptual model



1.2 Theoretical background

My three studies contribute to existing research in sport venue development finance, public sector economics, and public policy. The theoretical background overlaps in all three studies but each focuses on specific theoretical features. Generally, the studies relate to the initial examination of sport venue finances, particularly, since public incentives and financial contributions became more apparent in the latter half of the 20th century (Noll, 1974). Since the Braves moved to Milwaukee and the St. Louis Browns relocated to Baltimore in the 1950s, public costs and incentives are common practice in sport venue finance (Johnson, 1983; Eisen, 1987). Four leagues, Major League Baseball (MLB), National Basketball Association (NBA), National Football League (NFL), and National Hockey League (NHL) dominate North American professional sport. There is also a growing interest in Major League Soccer (MLS). North American leagues are closed-leagues that new franchises can only join through expansion and the permission of the leagues (Noll, 2003; Szymanski, 2003). Franchises pursuing relocation are also required to have the league's permission to do so with the permission of a majority of other franchise owners (Ross, 2003). The cartel structure of these leagues is arguably the fundamental reason why public officials use resources s to attract or maintain a franchise (Rosentraub, 1999).

Franchise owners can use the threat to relocate or offer to relocate to a new market to obtain public incentives or financial resources to build lucrative sport venues or other facilities such as baseball's spring training (Mills, Rosentraub & Jakar, 2019). Owners rely on the unwillingness of some public officials to be recorded as ones that "lost" a franchise (Baade & Dye, 1988a). The increased public involvement in facility finance required public officials to initiate finance mechanisms to support bond sales and other resources that are divided between local resources and exported costs (Siegfried & Zimbalist, 2000; Crompton, Howard & Var 2003). Several of the

taxation methods relied on tourism fees, or alcohol and tobacco that generate less opposition from residents (Buist & Mason, 2010). Public finance proponents commonly justify these new taxes by arguing that the benefits of having a new facility for a retained or new professional franchise compensate for the costs (Kellison & Mondello, 2014).

Critics often focus on the contested new economic impact a franchise and new facility can have on a city (Baade, 1996, Rosentraub, 1999). It is essential of course to distinguish between the franchise and facility although they are interconnected, just as plants are interconnected with the manufacturers using them. A facility can exist without a franchise, but a franchise will not exist without a facility. Both have different potential impacts (Coates & Humphreys, 1999). This distinction is noted in the examination of the produced public goods associated with the franchise rather than the facility (Johnson & Whitehead, 2007). Making the distinction between the facility and franchise is of course important when debating the construction of a new facility to retain an existing franchise or building one for an expansion franchise. In the case of a franchise relocating within a city or region, the impact focuses on the new facility on property values (Ahlfeldt & Maennig, 2009; Feng & Humphreys, 2012). If a franchise relocates to a new market then the impact included is the value of a venue and having a franchise (Mason & Slack, 1996). If that occurs, the new tangible and intangible benefits can be analyzed (Wicker, Hallmann, Breuer & Feiler, 2012). The intangible benefits are often insufficient or less than the costs of the sport venue to the public sector (Baade & Dye, 1988b). However, those findings remain inconclusive, particularly because of the intricacies of quantifying and determining the intangible benefits. Rosentraub, Swindell & Tsvetkova (2008), illustrate that the intangible benefits can exceed the cost of a venue to the public sector. However, some studies note other benefits at play that can at

the least “make the most of the situation”, by relocating economic activity within a region and if successful, attract extensive private investment (Rosentraub, 2006).

Sport, and similar assets (convention centers and museums) can exclude non-payers and are thus share more characteristics with other private goods than traditional local public goods (e.g., education, public transportation, etc.). Do the private goods aspects of sport make a public investment in a venue inappropriate (Skinner, Ekelund & Jackson, 2009)? The economics of such activities such as sport and tourism infrastructure require a critical perspective on the public sector’s role in modern economic and urban development (Bodlender, 1982; Mules, & Dwyer, 2005; Solberg & Preuss, 2007). Since local governments compete for human capital and economic activity, they are no longer just service providers but need to adopt business-like management strategies and become far more entrepreneurial (Harvey, 1989). Arguably, this is part of the reason why cities compete to host large sporting events (Baade & Matheson, 2016; Zimbalist, 2016), invest in museums, convention centers and tourism (Sanders, 1992 & 2002; Plaza, 2000)), and possibly why some public officials strive to maintain sport franchises. Each of these examples are studied, focusing particularly on their economic and social impact, and whether these impacts justify the allocated public resources (Hiller, 2006; Mills & Rosentraub, 2013). One clear difference between professional sport and other projects is that the economics of professional sport, its cartel-like status, and the scale of the resulting revenue streams. In my three studies, I analyze the monopolization of North American professional sport, the relationship between new stadiums and attendance in an open-league system, and I propose a theory that identifies why public officials continue to allocate public resources for heavily scrutinized projects.

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1.3 Methodologies

The first two studies include quantitative analyses. My empirical analysis in the third study is an extensive review and text analysis of previous studies and empirical data on recent sport venue projects in North America. The geographical analysis in the first paper uses an instrumental-variable regression examining metropolitan statistical areas (MSAs) and counties for five census periods (1970-2010) in the United States. The spatial analysis examined the demographic centrality of counties within MSAs and the probabilities of having a franchise based on market characteristics, the MSAs, and regions. I conducted post estimate analyses to predict the probability of a county having a franchise compared with the actual presence of a franchise (specificity and sensitivity). The attendance model for English soccer used a difference-in-difference model in both ordinary least squares and Tobit models. I examined the duration of the association between attendance and new stadiums using an interaction variable between the age of the new stadiums and their capacity. I tested the statistical significance of these interactions and used GIS to determine the statistical region for each club (Nomenclature of Territorial Units for Statistics - NUTS3) in order to collect population and discretionary income. I collected club related data from annual financial accounts published by English soccer clubs. In the final paper, I examine a hundred and sixteen studies that discussed sport venue finance. I analyzed and grouped the studies based on different categories. This study also included data collected on the financing sources for professional sport venues built since 2010 in the United States and Canada. I briefly review three of the recent projects based on the categories identified in previous studies.

1.4 Synopsis of the three papers

1.4.1 Paper 1: The economic geography of monopolized professional sport

Several studies descriptively analyzed the effects of the monopolized North American professional sport leagues. A few of these studies noted the size of the markets where franchises are located and the existence of similarly markets without franchises. My first study examined the economic geography with a more analytical approach strengthening the arguments that the monopolistic behavior of the four major sport leagues not only prevents franchises from moving to more appealing economically and demographically markets but also deprives those regions of teams. The instrumental-variable statistical analysis of franchise locations, a far more sophisticated approach to quantify cartel domination, and 1970-2010 census data reveals that in each period markets existed without franchises despite the analysis predicting otherwise. In addition, some markets had franchises despite the analysis predicting otherwise. The implications of these findings reflect on the locational control of professional sport and the ability to use potential relocation to secure public incentives for new sport venues.

1.4.2 Paper 2: Attendance and new stadiums in English soccer

This study provides another account on the implications of the monopolized structure of North American professional sport and stadium economics by comparing previous attendance studies in North American and English soccer new sport venues. The fixed-effect ordinary least squared and Tobit analyses of average attendance during the 1997-2016 seasons in the top four divisions of English soccer revealed that the duration of the association between new stadiums and attendance is closer to twenty years as opposed to the below ten years estimated in North American studies. English soccer, as opposed to the North American leagues, has a promotion and relegation system. The study sheds light on the likelihood that the closed league system is associated with the shorter

duration of the association between new venues and attendance. This strengthens the arguments that as long as the North American professional sport monopolies exist, increased attendance at new facilities insufficiently justifies public incentives as the economic activity of increased attendance depends on other factors controlled by the leagues and franchise and not the public sector.

1.4.3 Paper 3: Theoretical perspectives on publicly finance facilities

This qualitative analysis of previous studies and theoretical public and urban finance principles proposes that future examination of public involvement in sport venue finance should focus on recent on municipal capitalism and urban entrepreneurialism rather than public goods. Municipal capitalism and urban entrepreneurialism theories deliberate the public sector's role in the modern era's competition for human capital for economic development. In addition to providing services, cities are now more engaged in development initiatives and partnerships with the private sector in order to attract human capital and additional investment in the city. Classical theories and approaches do not justify the public's involvement in a monopolized industry. The on-going allocation of public resources to attract or retain sport franchise underscores the limitation in that approach. I recommend considering a different theoretical approach that could better frame what is taking place. I propose that future studies should analyze the sport venue projects as a public "private-like" investment rather than public goods.

1.5 Structure and summary

The purpose of this dissertation was to contribute to sport management and urban studies, focusing particularly on sport venue development and sport economics by writing three studies that I will submit to peer reviewed journals. My concluding remarks following the presentation of the three

studies summarizes the findings and conclusions from the three studies and includes my overarching conclusions on sport venue development and finance, and future studies.

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Chapter 2. Cartels and the Artificial Scarcity of Professional Sport Franchises: A Spatial Analysis

Abstract:

Despite the growing economy and population in the United States since the 1970s, North American professional leagues limited the expansion to very few new franchises. Arguably, the monopolistic characteristics of professional sport enable franchises to use relocation threats to secure public incentives. However, franchises would need potential markets without franchises where they could potentially relocate. I use an instrumental-variable two-stage probit analysis and 1970-2010 county census data to measure the probability of a county hosting a professional franchise to identify if potential markets exist. Previous assessments of market viability relied on important population growth. The more sophisticated approach in the model considers the relative location and population of a county within MSAs as a geographical indicator and other variables. I produce a cluster robust estimator of the variance for the county's MSA. The findings illustrate that there are in fact potential markets without franchises that existing franchises can use as leverage. This more robust approach validates the descriptive approaches that illustrated the monopolistic control of the markets for professional sport franchises.

2.1 Introduction

The location of professional sport franchises has changed in response to the shifting economic geography of United States. Professional sport was once concentrated in the Northeast and Midwest. Since the 1950s, however, league expansions and teams mainly relocated to serve markets in the West and South in response to new economic and demographic patterns (Molloy, Smith, & Wozniak 2011). Numerous franchises remained in once prospering cities in the Midwest and Northeast that suffered extensive job losses and a fleeing middle class after World War II. However, in several instances those franchises moved from central to suburban cities. These relocations were part of the suburbanization process that reshaped the urban geography of North American (Margo, 1992). Increased population and economic activity outside of the core cities created new potential markets for businesses and sport franchises within their existing metropolitan areas. Consequently, franchises like other businesses relocated to counties within their home regions preserving their existing fan base while playing in a new facility more conveniently located within the more affluent communities.

Figure 1 displays the location of the 71 franchises in the United States playing in the four major leagues (National Basketball Association (NBA), National Football League (NFL), Major League Baseball (MLB) and the National Hockey League (NHL) in 1970 and the 110 franchises playing in 2010. The Northeast and Midwest still dominate in the 21st century despite the population and economic decline of some of the larger cities in the Midwest. Figure 1 displays the more dispersed distribution in 2010 though still widely excluding large parts in the center. Leagues were expanding and some franchises relocated to new markets or followed suburbanization patterns.

Figure 2-1: Location of North American sport NFL, NBA, NHL and MLB franchises (1970 & 2010)

In some instances, franchises moved to nearby counties to play in a new facility in a suburban city but remained close enough to their previous site to leave their fan base largely unchanged. The most recent example was the relocation of the Atlanta Braves (MLB) from Atlanta (Fulton County) to suburban Cobb County. Relocating within the metropolitan statistical area (MSA) maintained their existing market while benefiting from the incentives provided by Cobb County. The league must approve every move of a franchise, even those within a region. Those within a region are rarely if ever denied. However, relocations to new markets, if approved, usually

require a relocation fee to offset the foregone income earned by selling a new franchise to a new owner. Simply put, the leagues' control of relocations and expansions, capitalizes on the closed-league structure and monopolistic markets (Beisner, 1988; Quirk and Fort, 2010).

A benefit of limiting the number of franchises permits the use of other viable markets as leverage points when bargaining for public incentives despite the political and public relations associated with a relocation. Host cities, however, often do not want to risk the loss of a team. These factors prompted studies focused on population size to illustrate the monopolistic behavior and bargaining or game theory positions of the leagues. This paper extends that work through an economic geography perspective analyzing franchise locations and markets in North America. This spatial analysis takes into consideration the relevancy of both the larger markets (MSAs) and the local market (counties) based on 1970-2010 census data. The models illustrate the potential markets within the MSAs where teams played and the other regions that could support teams in each of the five periods studied. The availability of potential and competing markets empowers businesses seeking financial incentives to minimize their operating and capital costs (Zheng and Warner, 2010). This appears to be the case for professional sport franchises in the United States that secure monetary and property incentives during negotiations for new facilities. The current circumstances and lack of competition are beneficial for franchises in smaller or economically weaker markets, and are arguably the main reason why some survive in certain markets. As long as franchises were able to secure public incentives and had some additional monetary support from the leagues, franchises were less reliant on the local markets but could also relocate within the market to areas that are more affluent. If the leagues retain anti-market (Kennedy and Rosentraub, 2000) power then it is unlikely that the perverse funding schemes for venues will abate. I validate

past research that portrayed a descriptive analysis of potential markets with a more statistical model.

I base my analysis on an instrumental-variable probit model using decennial data from the US Bureau of the Census for 1970 through 2010 for 84 MSAs and 502 counties. The location of each franchise and any changes in the location of its home field form part of the database. The two-stage model includes a county centrality factor that measures the population size and distance relative to other counties in the MSA and the MSA's total population. I also use MSAs to determine cluster robust standard errors. The centrality factor is treated as the exogenous variable resolving the possible but unlikely endogeneity between franchise location and population (i.e. that franchises cause population growth in some counties). The analysis specifically focuses on counties rather than MSAs because MSAs can have multiple counties with franchises. In addition, franchises can move between counties within a MSA to compensate for urban geographical shifts, and the importance of a concentrated local market as opposed to a more dispersed MSA. Following the introduction, section II presents a brief literature review of North American economic geography, firm locational decision-making, and sport and geography. Section III is an overview of the geography of North American professional sport. Section IV describes the methodology and the descriptive statistics. Section V discusses the regression model results. The implications of the data are discussed in section VI followed by the conclusions.

2.2 Literature review: North American economic geography and the geography of sport

Since the 1950s the United States' economic geography and economic activity spread south and west; within most areas there was also a high degree of decentralization. These changes coincided with the US increasing scale of a service-dominated economy and higher degrees of urbanization

(Sassen, 1990; Desmet and Fafchamps, 2005; Drucker, 2011). Counties as well as states and MSAs were being affected by the increase in service-based jobs and the declining importance of the manufacturing sector. In addition, there was an increasing concentration of lower income households in central cities as wealthier ones chose a more suburbanized lifestyle (Levernier, Partridge, and Rickman, 1998). As a result, the historic central cities had to compete with the land-abundant suburbs that were luring jobs away from the city (Burns, 1977; Scott, 1982). These stresses dominated in cities in the region described as the rust belt as there was also a relocation of people to southern and western states (Wilson and Wouters, 2003). Those cities that experienced job losses relied on supply-side techniques such as tax incentives to encourage business development in an era when businesses were moving away (Reese, 1992). North American cities and states were using tax incentives to lure surviving manufacturing firms from other states and cities (Lee, 2008). Several studies examined market and firm characteristics, as well as the impact of local incentives and taxation on locational decision-making (Arauzo-Carod, Liviano-Solis, and Manjón-Antolín, 2010). Tax incentives, however, often fail to achieve their initial goals and evidence suggests that specific interest groups were the beneficiaries of these subsidies (Buss, 2001). This research did not dissuade cities from using tax and other incentives to lure or maintain sport franchises (Noll and Zimbalist, 1997).

Several studies discussed the monopolistic characteristics of professional sport in North America and stadium finance (Coates and Humphreys, 2008). The majority of these concluded that the costs of facilities outweighed the tangible regional benefits (Lertwachara and Cochran, 2007; Baade, Baumann and Matheson, 2008). Why then did regions offer subsidies or incentives to attract or retain a team? The cartel-like structure of the four leagues protected by Congressional actions and decisions permitted the use of anti-market activities. Those tactics allowed teams and

the leagues to negotiate deals that ensured the public sector's investment in venues. In some instances, governments paid for the entire cost of a venue; in other situations, the government paid for part of the capital or operating costs (or both) of the desired venues. The incentives were not limited to offsets for capital and operating costs. The public sector also helped secure the needed land and provided property tax abatements (Baade and Matheson, 2006). Most studies on stadia finance focused on case studies or specific leagues as opposed to a more collective study of North American professional sport. To illustrate the uneven bargaining dynamic between the public sector and teams/leagues Quirk (1973), Zimbalist (1992), Quirk and Fort (1997), and Rosentraub (1997) looked at the population needed for a market to support a team and/or the distribution of playing talent. These works compared selected market characteristics, including population, to markets with teams and those without. These descriptive analyses presented the argument that the number of franchises and metropolitan populations were intentionally unbalanced to empower the leagues and franchises (Rosentraub, 1997, P. 76-79). I advance this argument – the scarcity of franchises - using a statistical analysis that takes into consideration various market conditions including income and the relative population and distance from other counties in the metropolitan area. Previous studies used these market characteristics, examining locational decision-making and their association with attendance as a profitability indicator (Jones and Ferguson, 1988). The study used population and income to examine locational factors in relation to attendance and profitability. This study contributes to existing literature on monopolistic control from an economic geography perspective. I also provide another example on the utilization of economic geography theories in locational decision-making and different industries.

The leagues and owners pursuing better markets, and the individual and league-wide benefits for enhancing profits determine North American sport franchise relocations and league

expansions. Strengthening the league's monopolistic control also makes it more difficult for competing leagues to form (Quirk, 1973). The geographic perspective of space and place that examines market shifts and relocations is important but insufficiently discussed in the literature (Bale, 1981; Bale, 2002; Higham and Hinch, 2006). Some geographical studies exist including an earlier study of potential locations in the English soccer league (Rivett, 1975) and spatial competition in sport and the impact on relocation (Henrickson, 2012). However, very few studies explicitly use geographical space and place analyses to study the geographical distribution of professional sports. Some geographical measures are used in sport studies such as the use of local demographic and economic characteristics to study local and regional effects of sport development (i.e. Walker, 1985; Siegfried and Zimbalist, 2006; Feng and Humphreys, 2018) or the use of distance in attendance studies (Borland and Macdonald, 2003). Hence, sport related studies do not ignore geographical elements, but a more explicit geographical approach can broaden the examination of space and place in sport and the analyses of markets, locations, and policies (Wise, 2015). My research contributes to the explicitly understudied group of geographical analyses examining locational dynamics of sports relocation and movement (Bale, 1988). This also amplifies previous work that focused on demonstrating that the leagues have artificially constrained the growth of teams.

2.3 The Geography and locational distribution of North American Professional sport

Franchises often use relocation prospects during stadium finance negotiations (Noll and Zimbalist, 1997). Relocation can occur between counties within MSAs or franchises moving to new MSAs in different states (Table 1). The purpose of the table is to provide a clear relocation and expansion pattern throughout the United States during the 1970-2010 period. During the 1970-2010 period,

there were 21 instances where franchises relocated between counties within the same MSA. Table 1 displays franchise mobility on a county level data for the 502 counties in the 84 MSAs identified in the data collection process including counties and MSAs with, and those without, franchises. The table indicates if franchises remained in the county or relocated to a different city within the MSA; if the county was located in an MSA with a franchise but the county itself did not have a franchise; or if the county was located in an MSA without a franchise in two adjacent periods (i.e. did not have one in 1970 or 1980). Several counties and MSAs did not have a franchise throughout the five census periods. MLB franchises rarely relocated since the 1970s following the relocation of a number of clubs in the 1950s and 1960s. Mobility was more apparent in other leagues but the majority of the MSAs and most counties with franchises maintained their status.

Table 2-1: Franchise movement in the 502 counties and MSAs included in the data between 1970 and 2010

NFL

Status	1	2	3	4	5	6	7	8	9
1970-1980	21	4	1	4	216	3	3	8	243
1980-1990	25	2			216	10	2	9	236
1990-2000	24	2	2	3	215	11	3	26	217
2000-2010	27	3		3	240		1	7	222

NHL

Status	1	2	3	4	5	6	7	8	9
1970-1980	9		1	1	104	9	5	56	318
1980-1990	12		3	1	129	27	1	3	324
1990-2000	11	1	2	2	116	15	9	65	282
2000-2010	20	1	1	1	162	19	2	17	280

MLB

Status	1	2	3	4	5	6	7	8	9
1970-1980	20	2		1	196		2	15	267
1980-1990	22			1	210				267
1990-2000	22	1		1	212		4	12	251
2000-2010	26	1		2	223				251

NBA

Status	1	2	3	4	5	6	7	8	9
1970-1980	11	1	1	2	113	12	9	79	275
1980-1990	19	1	2	1	179	10	6	36	246
1990-2000	24	2		2	215			2	258
2000-2010	25		1		215	4	3	16	239

All counties (with one or more franchises)

Status	1	2	3	4	5	6	7	8	9
1970-1980	29	1	1	9	218	3	7	25	210
1980-1990	42	1	1	2	239	1	4	15	195
1990-2000	45	2	1	4	251	3	3	15	179
2000-2010	50	2		2	266		3	14	166

Summary of the four leagues

Status	1	2	3	4	5	6	7	8	9
1970-1980	61	7	3	8	629	24	19	158	1103
1980-1990	78	3	5	3	734	47	9	48	1073
1990-2000	81	6	4	8	758	26	16	105	1008
2000-2010	98	5	2	6	840	23	6	40	992

Status Index:

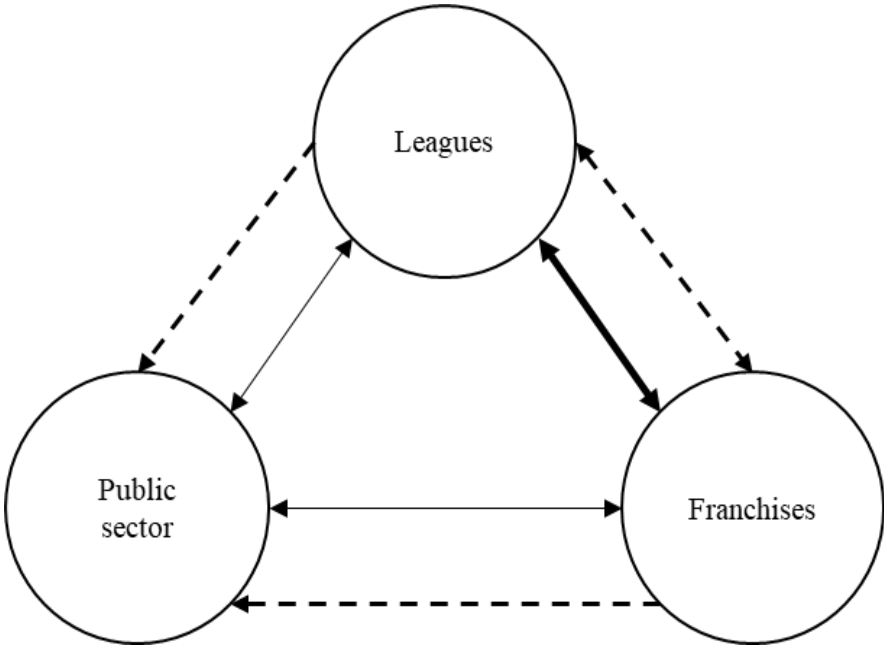
1. County: The county had a franchise in both periods
2. County: The county had a franchise that moved to another county in the same MSA
3. County: County had a franchise but then the franchise left the county and MSA
4. MSA: Franchise was in a county in the same MSA and then moved to the given county
5. MSA: Franchise was in a different county in the same MSA and remained in the MSA and not in the county
6. MSA: The MSA where the county was located had a franchise that then left the MSA

7. Neither: There was not a franchise in the county or MSA that then moved to the county
8. Neither: There was not a franchise in the county or MSA but then a franchise located in the MSA
9. Neither: Neither the county or MSA had a franchise in each period

During the 2000-2010 period, there were few relocations. The data in Table 1 does not capture the few cases where a franchise left a county between two periods and a new franchise from the same league located in the same county or market within the same period (i.e. Cleveland). The NHL differs from the other leagues because of the number of franchises playing in Canada that are not included in this study. The relocation of two NHL franchises to Canada from Atlanta (Atlanta Flames were there from 1972 to 1980 and Atlanta Thrashers from 1999-2011) influence the MSA figures in Table 1 for the NHL.

There is arguably no reason why, if franchises were free to relocate, that they should not move to new markets as do other businesses. However, under the current cartel-like operational status of the leagues, movements occur if desired by an owner while also satisfying the league's interests. The decision-making process to relocate a franchise involves three primary actors. In Figure 2, I depict the relationship between these primary actors: the leagues, the franchises, and the public sector. The relationships in this triangle emphasize the limitations placed on relocation by leagues and other franchise owners, and the predicaments that cities face with a relocation threat (Johnson, 1983). The solid arrows in Figure 2 display the general relationship between the three parties. The thicker solid arrow represents the stronger relationship between the leagues and franchise owners and the reduced impact or importance of the public sector. The public sector has some influence as long as franchises pursue public incentives, but cities face two possibilities. They either provide some incentives or remain without a franchise. The main issue is that cities are not often aware if the franchises can in fact execute the relocation threat (Rosentraub and Swindell, 2002).

Figure 2-2: Relationship between leagues, franchises and the public sector



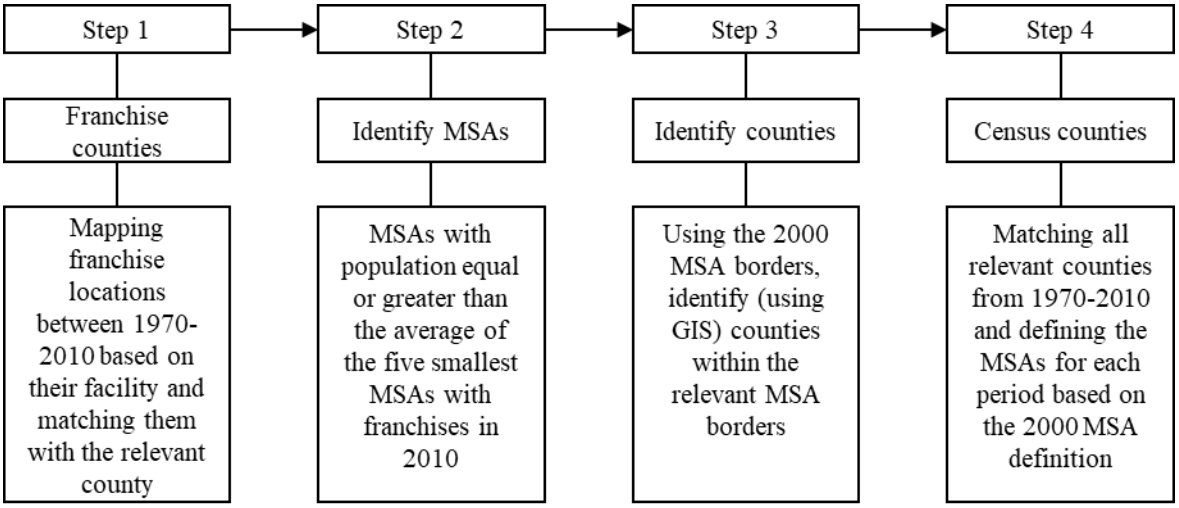
The dashed lines emphasize the leagues and franchise ownerships influential abilities to use current market conditions when bargaining with the public sector. The one-way arrows emphasize that the apparent symmetry is broken by the one-way arrows leading to (but not away from) the public sector. Under current circumstances the public sector's ability to attract a franchise, if applicable, relies primarily on two possibilities: 1) an untapped market that appeals to owners, e.g. Los Angeles (NFL most recently) and Las Vegas (NHL and the NFL most recently). 2) The public sector approves a financing/property allocation incentive that appeals to franchises (for example, Cobb County's incentives that convinced the Atlanta Braves to move away from downtown Atlanta). In some cases, such as the upcoming relocation of the Oakland Raiders to Las Vegas, the interests of the team and league have been satisfied. The Raiders will enjoy the revenues from a new domed stadium and the league has a team in a growing tourist destination. In addition, the Greater San Francisco/Oakland region are sufficiently large enough to support a second NFL

franchise. The existence of a vacant market spot makes it easier for other franchises to threaten to relocate in an effort to secure additional financial assistance from their home local governments who might fear the loss of the team.

2.4 Methodology and data

The first step of the research was to identify the MSAs and counties included in the analysis. Because of the extended period and use of census data, MSA and census tract geographical definitions are inconsistent. This study, therefore, uses county level statistical areas and census data collected for counties that were fairly consistent. Because MSAs change, I used the 2000 census definition to match counties and MSAs for the five periods. I describe the identification of the relevant MSAs and counties in Figure 3. The first step was to identify the MSAs where franchises were located and their population. The second step was identifying other MSAs without franchises that had a population similar or greater than the average of the five smallest MSAs with franchises. The purpose of this step was to identify “potential” markets without franchises. The third step identifies each county in the MSAs from steps one and two. The fourth step was the creation of a unified list of counties for the five census periods in order to create a longitudinal data series for each county.

Figure 2-3: MSA and county identification process



Census data has limitations, particularly longitudinal data, because geographical definitions change as has the data collection methods and questions. Because MSA definitions also change, I selected the 2000 census MSA borders to aggregate data based on county level data for each decennial period. By doing so, I created a more consistent data set based on the counties that were within the 2000 MSA borders. I based the actual MSAs included in the data on the 2010 MSAs because the dataset considers the most recent franchise locations. I identified 84 MSAs throughout the United States (I do not include Alaska and Hawaii in the analysis because distances and population sizes make each unlikely destinations for a franchise) based on the average of the five smallest MSAs with franchises and the "potential" markets. I collected the counties that are the actual observations by using GIS (Geographical Information System) and the 2000 Census County and MSA borders for the 84 MSAs included in the analysis. This process produced 502 comparative counties in the 84 MSAs that include counties with franchises and the control group that are counties without franchises in each period. The next step was to identify available and relevant longitudinal variables dating back to 1970 that primarily capture demographic market characteristics including population and income that indicate market strength within the limitations

of available long-term comparable market data. Population was also collected in order to identify the centrality of each county within the MSAs. I initially wanted to include data dating back to the 1950 to capture the post-industrial changes after World War II, but this was not possible because of the limitations with census data[1]. Other limitations include capturing other market conditions that could shape decision-making such as business related variables that are not available for the periods analyzed in this study. The model includes an income variable and education that reflect financial market strengths.

I base my research on an instrumental-variable estimation model with a causal inference based on the centrality of each county relative to the market size of each county in an MSA. I estimated the centrality factor (*CC*) by measuring the sum distances between each county in an MSA using county central points defined in GIS. I then used the distances to estimate a centrality factor for each county based on the county's population at a given period and the MSAs population at the same period. The equation (I) estimates both the population and income factor for each county.

(I)

County centrality index estimation

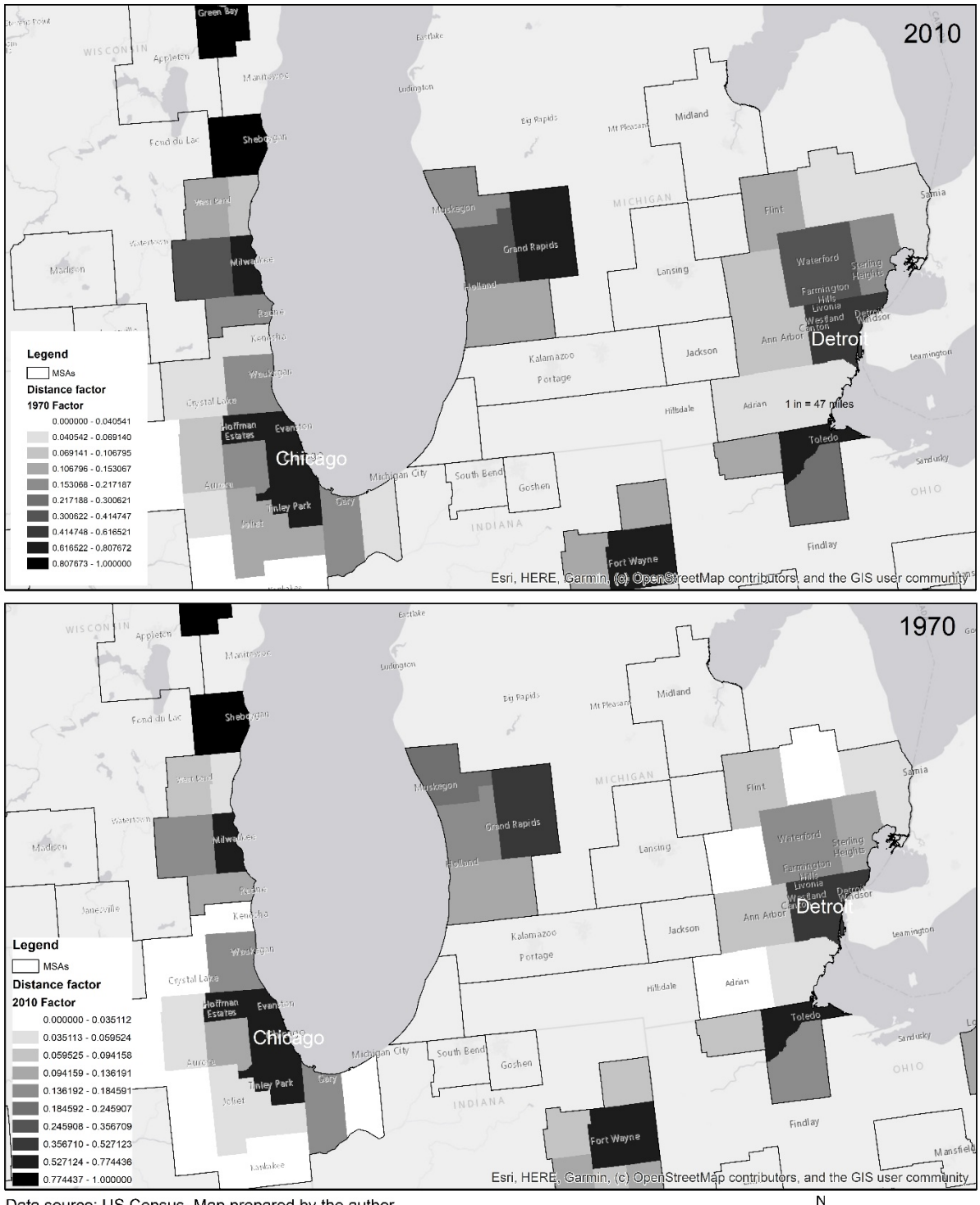
$$CC_i = \frac{\sum_{c=i}^{n} \frac{1}{1 + d_{i,j}} * Population_c}{Population_m}$$

Where *CC* is a measure of centrality for each county in a given MSA, *c* is given county, $d_{i,j}$ is the average distance between the county and other counties in the MSA, and *m* is the MSA. So a county in an MSA with only one county will equal 1 (e.g. San Diego). Figure (4) displays the

[1] Various census questions were not included in the 1950 and 1960 census, and certain population groups were under represented therefore longitudinal data was inconsistent

results of the county centrality in the Detroit and Chicago MSAs for 1970 and 2010. As opposed to Chicago, Detroit depicts the core's slight decline and growth of nearby counties between the two periods.

Figure 2-4: County centrality in the Detroit and Chicago MSAs in 1970 and 2010



Data source: US Census. Map prepared by the author

The estimated county centrality is the basis for the instrumental-variable two-stage standard least squared probit estimation model that also considers a cluster robust estimator of the variance for the county's MSA (Williams, 2000). The object of the model is to estimate and use the predicted model's ability to identify the number of markets with a predictive probability greater than 0.5 but without a franchise. The two-stage model provides the causal inference between the predicted probability and the county's centrality thus resolving the endogeneity argument that could suggest that having a franchise increases the county centrality. It is unlikely but nonetheless important to consider this in the model. The results in the next section resolve this argument, at least in this study. The relationship between the counties and MSAs takes into consideration the possibility that even if the MSA has a large population, franchises will prefer a spatially concentrated market and potential locations that capture the concentrated populations. There is also the possibility that some MSAs could have more than one location that offers access to densely populated spaces. The first stage of the two-stage model is the reduced form equation where the endogenous regressor (county's centrality index) is regressed on the instruments and covariates. The second stage is the probit model including the control covariates that are assumed uncorrelated with u_i (Bascle, 2008) and the predicted $\widehat{CC}$ value.

(II)

Reduced form equation for the first-stage instrumental variable estimation

$$CC_{it} = \gamma_0 + \sum_{j=1}^{2} \gamma_j Z_{ji} + \sum_{i=3}^{14} \gamma_i W_{it} + v_i$$

Where Z are the instrumental variables and W are the covariates included in the probability model. The predicted endogenous coefficient $\widehat{CC}$ is then included in a probit model as an exogenous coefficient outlining the causality between a county's centrality and the presence of a franchise.

The model provides the evidence necessary to determine that franchises, at least in this study, are not centrality predictors whereas the centrality coefficient is a determinant predictor for the probability that a franchise will locate in a given county.

(III)

Second-stage probit regression including the exogenous covariates and predicted value $\widehat{CC}$.

$$\Pr\left[F_{i,t} = 1 \middle| X_{i,t}\right] = Y_{i,t} = \beta_0 + \beta_1 \widehat{CC}_{i,t} + \sum_{2}^{13} \beta W_i + u_i$$

Where the probability of transitioning from 0 to 1 for county *i* in time *t* is assessed using the second stage of the two-stage standard least squares and robust clustering taking into consideration the MSAs where counties are located. I also estimate a standard probit model including the covariates and instrumental variables, as well the county centrality. Comparing the predicted probabilities $\hat{Y}$ estimated in each of the models was used to identify the potential markets in each period that did not have a franchise.

2.4.1 Data

The data sample covers five decennial periods from 1970 to 2010 and 502 counties. The dependent variable in this study is the presence of a franchise playing in one of the four major leagues in a county in each period. Hence, each county has five observations. This takes into account the changes that occurred within each county throughout this period and the relative change compared to other counties in the metropolitan statistical areas. The number of counties remained consistent throughout the five periods but the number of franchises changed (Figure 5). Table 2 displays the descriptive statistics for the variables included in the analysis.

Figure 2-5: Number of franchises in the United States included in the dataset in each period in total and for each league

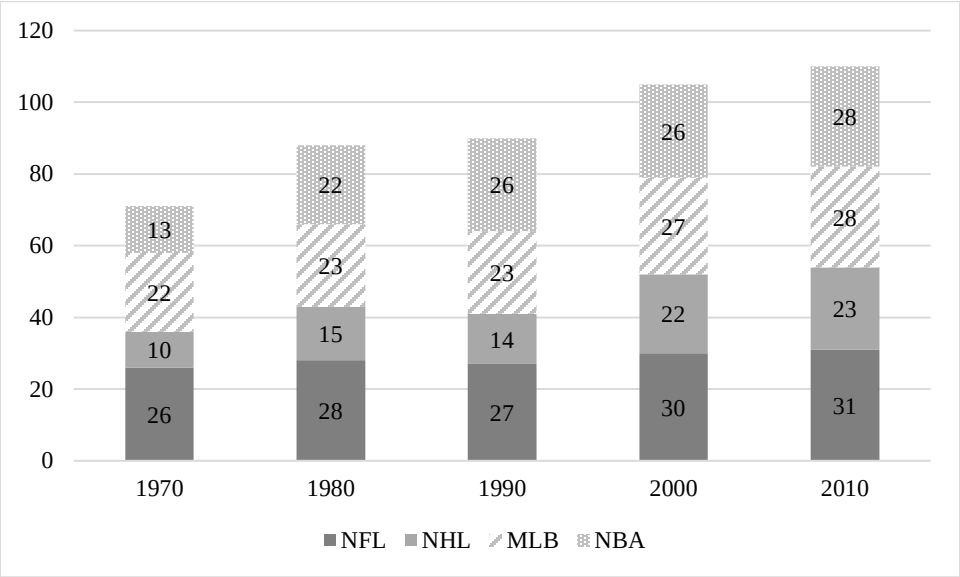


Table 2-2: Descriptive statistics

Variable	Observations	Mean	Std.Dev	Min	Max	Description	Source
County	2,510	249.82	144.53	1	500	Counties included in the data 1970-2010	US Census
MSA	2,510	41.90	23.80	1	84	MSA based on 2000 definitions	US Census
Region	2,510	2.39	1.02	1	4	Census Bureau-designated regions	US Census
Population	2,497	324674.20	606723.10	4134	9818605	Population for each county	US Census
Income	2,479	63679.96	16056.25	22762	151906	Household income for each of the counties	US Census
Population (MSA)	2,510	3648964.00	4784327.00	96660	21821921	Aggregate county population in each period	US Census
Income (MSA)	2,502	63033.50	11779.21	25715.72	93643.74	Average county household income in each period	US Census
County centrality	2,500	0.19	0.23	0.01	1	County centrality defined in model I	US Census and GIS
Married	2,502	136325.40	238836.10	1902	3645647	Married people in the county	US Census
Enrolled	2,502	88889.19	170437.60	877	2931076	People above the age of 3 enrolled in school	US Census
Poverty	2,505	37102.01	90350.16	0	1674599	People in the county declared poverty	US Census
Franchise	2,510	0.09	0.29	0	1	Whether a county has a franchise at a given period	Various
Franchise before	2,510	0.08	0.27	0	1	Franchise in the previous period	Various
NFL	2,012	0.06	0.23	0	1	NFL Franchise in the previous season (county)	Pro football reference
NHL	2,012	0.03	0.17	0	1	NHL Franchise in the previous season (county)	Hockey reference
MLB	2,012	0.05	0.21	0	1	MLB Franchise in the previous season (county)	Baseball reference
NBA	2,012	0.04	0.20	0	1	NBA Franchise in the previous season (county)	Basketball reference

There were a few instances where data were not available for a county in a specific period that is one of the limitations when using census data. The 502 counties represent on average 63.8% of the entire US population during the five periods (Table 3). The slight increase in the relative size of the dataset's population and the country's population displays the relative growth of the counties in the data compared to the rest of the country. However, the relative size is close throughout the duration of the 50-year period. Those numbers alone emphasize the exclusivity of the professional sport markets in the US because the percentage of the population within the 502 counties that do not have a franchise in their market further increases the gap between franchise markets and the entire US population. The population in the 502 counties grew by 56.4% between 1970 and 2010. The population and leagues display similar growth patterns, though on different scales.

Table 2-3: Data and US population (millions) 1970-2010

	1970	1980	1990	2000	2010
Data population	128.48	141.15	158.73	181.44	200.91
United Stated	203.39	226.55	248.71	281.42	308.75
Percent	63.17	62.31	63.82	64.47	65.07

Census data for married and people 3 years and older enrolled in school are the instrumental variables, and are used in the first-stage to solve for the potential endogeneity problem. I selected these variables of their correlation with the size of the population but are unlikely to be impacted by the location of a franchise in a given county at a given time. However, even in this instance some farfetched arguments can be made that having a franchise reduces the number of people married but the model's results presented in the next section suggest the Wald tests of exogeneity are statistically significant.

2.5 Results

I report the regression results for the four estimation models in Table 4. These include the two instrumental models, once if a county had a franchise in general in the previous period and again if a county had a franchise from each one of the four major leagues. The third and fourth columns in the results are for the one-stage probit models. The second part of the results indicates the validity of the tests. The results presented in Table 4 do not include all the coefficients such as the year, but I do present the more interesting coefficients. I present the actual predictive results from the model in the next section where I discuss the predicted probabilities, sensitivity and specificity. However, the results below are still important, particularly, their positive or negative effect and statistical significance.

First, the association between the county centrality and having a franchise is positive and statistically significant. This association indicating the increased probability of having a franchise based on the county centrality is substantially greater in the two-stage models. This indicates the significance of the instrumental variable in the model and exogeneity between having a franchise and county centrality. Income is al county centrality so positively associated but the impact is marginal. This is not surprising given the increased wealth in the suburbs and the concentration of lower income households in several larger cities. Unfortunately, data for other economic variables also from non-census data that could affect location such as number of large firms and corporations were not available as far back as 1970.

In the two probit models without the instrumental variables, married and enrolled in school, that were both used in the first-stage instrumental probit model are not statistically significant. Both variables were statistically significant in the first-stage model in the two-stage analysis. This is not surprising given the correlation between population and marriage and school

enrolment and the unlikely correlation between those variables and having a franchise. The regions for the most part are not statistically significant, and the results indicate the probabilities compared to the Midwest. I set the Midwest as the base because of the substantial changes in the economics of that region since the 1950s and the hypothesis that franchises would relocate to other markets located elsewhere in the county. The Northeast had a negative association illustrating the decreased likelihood that counties in this region would be likely to obtain a franchise if they did not already have one, but this was only statistically significant in the first one-stage probit analysis. The other region that indicated some statistical significance (though only at the 90% level and in three of the four models) is the South. In this instance, counties in the South without franchises, as hypothesized, had a greater probability of attracting a franchise when all the other coefficients are held constant and if the franchise distributions were not monopolized.

Table 2-4: Regression results

VARIABLES	Probit	Probit (leagues)	IV Probit ($\widehat{cc}$)	IV Probit ($\widehat{cc}$ leagues)
County centrality	0.967***	1.048***	5.049***	5.010***
	(0.230)	(0.282)	(0.409)	(0.465)
Income	1.20e-05*	1.04E-05	3.61e-05***	3.11e-05***
	(0.000)	(0.000)	(0.000)	0.000
Franchise (previous)	3.575***		1.209**	
	(0.275)		(0.596)	
NFL		2.519***		0.688
		(0.415)		(0.548)
NHL		1.791***		1.247***
		(0.465)		(0.381)
MLB		0.989		1.120*
		(0.922)		(0.620)
NBA		2.923***		1.266**
		(0.442)		(0.516)
Northeast	-0.456**	-0.0521	-0.116	0.0698
	(0.206)	(0.195)	(0.251)	(0.243)
South	0.288*	0.291*	0.242*	0.228
	(0.158)	(0.164)	(0.145)	(0.143)
West	0.0175	-0.309	-0.173	-0.255
	(0.219)	(0.308)	(0.264)	(0.286)
Married	2.34E-06	-7.53E-08	9.55e-07***	1.12e-06
	(0.000)	(0.000)	(0.000)	(0.000)
School	2.60E-06	5.89E-06	-8.74e-07	-1.03e-06
	0.000	0.000	(0.000)	(0.000)
Constant	-3.347***	-3.402***	-1.346***	-2.067***
	(0.539)	(0.782)	(0.481)	(0.615)
Observations	2,472	1,977	2,472	1,977
			Wald test of exogeneity (corr = 0): chi2(1) = 28.54 Prob > chi2 = 0.0000	Wald test of exogeneity (corr = 0): chi2(1) = 23.98 Prob > chi2 = 0.0000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Having a franchise in the previous season is positive and statistically significant, which is not surprising given that most franchises remained in their market and expansions are limited. The two models that estimate the leagues individually also indicate the difference in the leagues' mobility. The NBA and NHL that witnessed the most changes are both statistically significant, indicating the probability of counties without franchises switching to counties with a franchise. The data also indicated how the NFL and MLB relocated less frequently and therefore the variable is less associated with the probability of switching from not having a franchise to having one.

While the results displayed in Table 4 are interesting, two other components of the analysis are more important. The Wald test in the exogeneity instrumental-variable probit models were both statistically significant with zero correlation. This indicates the validity of the test and exogeneity between the county centrality and having a franchise. Another indication validating the model is the accuracy of the estimation models. In all four models the area under the ROC (receiver operating characteristics) curve was close to 99% which indicates the discriminatory accuracy of the diagnostic tests in the models and their ability to correctly classify the two states (having a franchise and not having a franchise). The accuracy of the models strengthen the arguments made in the next section that discuss the post estimation analysis of the sensitivity, specificity and predicted probabilities.

2.6 Discussion

The more interesting consequence of the above models is the predictive analyses that principally answer the questions raised in this research. The model identifies "incorrectly" predicted observations. These "incorrect" observations are instances where the model predicts that a county has a franchise but that is not the case in reality, specifically, predict a false positive. I measure these predictive probabilities and outcomes by estimating the sensitivity and specificity of the models. Sensitivity is the model's ability to correctly identify counties with a franchise whereas the specificity is the models' ability to identify correctly the counties that do not have a franchise. In both instances, the results displayed in Table 5 emphasize the strength of the model but also provide the basis to determine that potential markets existed without franchises. Potentially, in a different less monopolistic system these markets would possibly have franchises and decrease the

use of relocation threats to bargain for public incentives. The threshold in Table 5 was a probability of 0.5, commonly used in these types of analyses (Fielding and Bell, 1997).

Table 2-5: Sensitivity, specificity and model classification

	Instrumental - All			Instrumental - Leagues			Probit - All			Probit - Leagues		
	D	~D	Total	D	~D	Total	D	~D	Total	D	~D	Total
+	189	12	201	159	14	173	189	11	22	162	14	176
-	38	2233	2271	39	1765	1804	38	2234	2272	36	1765	1801
Total	227	2245	2472	198	1779	1977	227	2245	2472	198	1779	1977
Sensitivity		83.26%			80.30%			83.26%			81.31%	
Specificity		99.55%			99.21%			99.51%			99.10%	
Positive predictive		94.03%			91.91%			94.53%			92.05%	
Negative predictive		98.33%			97.84%			98.37%			98.00%	
Correctly classified		97.98%			97.98%			97.32%			98.06%	

Classified + if predicted Pr(D) >= 0.5
Sensitivity Pr(+|D)
Specificity Pr(-|~D)
Positive predictive value Pr(D|+)
Negative predictive value Pr(~D|-)

In all four of the models, the analysis reveals the existence of markets without franchises at different periods. Based on the predictive post estimate probabilities the model identifies markets with franchises that are actually predicted as non-franchise markets. More importantly though is the predictive probability of markets without franchises that the data actually predicted differently. These are instances where the actual outcome is having no franchise and the model predicts a positive outcome. Not all the positive observations were correctly identified and not all the negative observations were correctly identified. These results are important because they suggest that the predictions are different from the true outcomes. The average positive predictive value of the four models is 93.1% whereas the average negative predictive value is 98.1%. In both instances, the models predict over 90% of the observations, and overall the models, on average, correctly classified 97.8% of the observations. The models, as anticipated, predict some

observations that are different from reality, hence the sensitivity and specificity are not 100%. Hence, the models predicted that some observations with franchises did not have a franchise based on existing data and some counties without franchises had a franchise in the model. Table 6 presents the counties that the predicted probabilities identified to have a franchise in the models despite not having one.

Table 2-6: Counties that the models predicted to have a franchise despite not having one (have a predicted probability larger than 0.5)

Year	County	MSA	State	County population
2010	Clark	Las Vegas	Nevada	1,951,269
2010	Essex	New York--Northern New Jersey--Long Island	New Jersey	783,969
1990	Hampden	Springfield	Massachusetts	456,310
2000	Hartford	Hartford	Connecticut	857,183
1970	Kings	New York--Northern New Jersey--Long Island	New York	2,602,012
1980	Kings	New York--Northern New Jersey--Long Island	New York	2,230,936
2000	Kings	New York--Northern New Jersey--Long Island	New York	2,465,326
1990	Middlesex	New York--Northern New Jersey--Long Island	New Jersey	671,780
1970	Onondaga	Syracuse, NY MSA	New York	472,746
1990	Palm Beach	West Palm Beach--Boca Raton	Florida	863,518
2000	Palm Beach	West Palm Beach--Boca Raton	Florida	1,131,184
2010	Palm Beach	West Palm Beach--Boca Raton	Florida	1,320,134
1980	Pulaski	Little Rock--North Little Rock, AR MSA	Arkansas	340,613
2010	Riverside	Los Angeles--Riverside--Orange County	California	2,189,641
2000	San Bernardino	Los Angeles--Riverside--Orange County	California	1,709,434
2010	San Bernardino	Los Angeles--Riverside--Orange County	California	2,035,210
2000	Summit	Cleveland--Akron	Ohio	542,899

The list is not an extensive list but it also unlikely represents the true number of available counties that could potentially host a franchise. This just represents the 0.5 threshold; a 0.4 threshold would increase the number of counties and could still be a representative of potential counties. Most importantly, the list of counties implies that some MSAs have multiple counties that are predicted to have a franchise, some of which already have a franchise but there is evidently

space for an additional franchise in the MSA in a different county. Interestingly, Clark County (NV) and Kings County (NY) both have franchises now.

Population appears to be one of the fundamental decision-making agendas when determining where franchises and arguably businesses in general locate. Clearly, other indicators affect where franchises locate other than population, but population appears to be the most significant one. Despite this, there are still some larger counties and MSAs that do not have franchises while, some relatively small counties and MSAs have franchises. However, other than the few instances where franchises play in smaller counties or MSAs we still expect to see a significant variance between counties with and without franchises. Table 7 displays county population in each of the periods, distinguishing between counties with and without franchises.

Table 2-7: County population (when available) with and without franchises 1970-2010

	Count		Average		Max		Min	
Franchise	Yes	No	Yes	No	Yes	No	Yes	No
1970	31	466	1,460,174	178,576	7,032,075	2,602,012	158,244	4,134
1980	45	455	1,274,864	184,144	7,477,503	2,230,936	175,280	4,842
1990	48	452	1,356,060	207,161	8,863,164	2,300,664	194,594	5,315
2000	52	448	1,473,021	234,028	9,519,338	2,465,326	226,778	5,623
2010	55	445	1,529,225	262,469	9,818,605	2,504,700	248,007	6,128

Because population is likely an important factor that franchises and leagues consider in an attempt to capture large markets, it is interesting to note that the largest county without a franchise is substantially larger than the smallest county with a franchise (Table 6). This is likely because the Green Bay Packers play in a small local market but have a large fan base that travel to the games from other MSAs. Green Bay however is the exception that consistently had a franchise despite a small market. However, while Green Bay is an exception, the larger counties without a franchise are still substantially more populated than several of the counties with franchises. The

same is true for MSA populations. The number of franchises in each league is substantially smaller than the number of MSAs, and several franchises from different leagues play in the same markets. Hence, there will always be counties and MSAs without franchises, at least so long as the leagues are closed, legally protected, and authorized to control the supply of franchises. The fact that franchises remained in some markets may also be due to their embedded nature. Additionally, the combination of securing public incentives and other non-market dependent revenues such as shared-revenues reduce their financial burden and dependency on the local market. However, even if franchise owners were interested in relocating, the leagues in conjunction with the other franchise owners could potentially block the move. Article 4.2 of the NFL's constitution and bylaws[2] clearly indicates this:

> "Article 4.3 requires prior approval by the affirmative vote of three-fourths of the member clubs before a club may transfer its franchise or playing site to a different city either within or outside its existing home territory. Article 4.3 confirms that each club's primary obligation to the League and to all other member clubs is to advance the interests of the League in its home territory. This primary obligation includes, but is not limited to, maximizing fan support, including attendance, in its home territory. *Article 4.3 also confirms that no club has an "entitlement" to relocate simply because it perceives an opportunity for enhanced club revenues in another location.*"

[2] (https://www.leg.state.mn.us/webcontent/lrl/guides/footballstadium/nflfranchiserelocationrules.pdf)

2.7 Conclusions

My study's results strengthen the doctrine emphasizing the consequences of the monopolistic characteristics of North American professional sport leagues. The fact that there are viable markets for franchises because of their population size and market potential strengths implies that various forces are in play that may not adhere to open market behavior. This work provides vivid measures of the value of the control of the supply of franchises extended to the four major leagues by the United States and Canada. As a result, some franchises can easily pursue public incentives that reduce their costs as they establish auctions between similarly valuable markets. As long as potential markets exist, franchise owners can use them to either negotiate deals in their market or seek incentives from alternative markets. Revisiting the relationship described in Figure 2, major league markets are determined by the leagues and teams that limit expansions and control relocations. The existence of potential markets without franchises identified in this research strengthens the relationships described in Figure 2. Public sector officials have limited control over the location of franchises other than the incentives they offer, but even then, there is no guarantee a franchise will relocate or expand into that market. Because of the competitive imbalance in professional sports between leagues playing similar sport, the only way for cities or regions to have a major league franchise is by hosting a member of one of the top leagues. Therefore, cities cannot use competing leagues and franchises in the bargaining processes in an attempt to reduce the public's financial contribution.

While there are clear deficiencies in the current system, some benefits exist, particularly for cities that suffered economic decline since the mid-20th century. Because of league policies such as shared revenues and substantial broadcasting revenues, franchises can be made to be less dependent on the local market. Additionally, as this research indicates, the decline of major cities

coincided with nearby suburban development so franchises in some instances were able to relocate to nearby counties but remain in the market. Another prospect is that while other markets do exist they do not necessarily offer better prospects for the league and existing franchises. Franchises are less incentivized to relocate and it is more likely that franchises in those markets will be expansions. The actual social significance of sport franchises in cities suffering extensive job losses and decline is uncertain, but losing a sport franchise can be perceived as another indication that the city's appeal is declining. There are some social amenities related to sport franchises, but whether or not they justify public expenditure, is disputed (Groothuis and Rotthoff, 2016). Nonetheless, large portions of the population still care about their beloved sports teams.

Despite the criticism revolving around the relocation debate, the number of franchises relocating is not as extreme as is often portrayed. Baseball franchises that are the least mobile and possibly several franchises from other leagues may just be more embedded in their local markets and therefore less likely to relocate to new ones (Knoben and Oerlemans, 2008). More research is required however to determine if that is in fact the case and which franchises are more embedded and less likely to relocate. I also reiterate the importance of geographical analyses of the sport industry discussing future development and the importance of space and place in sport facility finance and the special characteristics of some markets and other variables that could determine potential sites for sport franchises.

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Chapter 3. Enduring Love: the Long-Term Effect of a New Stadium on Attendance at Professional English Soccer[3]

Abstract:

The construction of new stadiums for professional sports teams is often associated with an increase in attendance at the facility: the so-called Honeymoon Effect. Drawing on a sample of English professional soccer clubs between 1997-2016, we find no tendency for the Honeymoon Effect to disappear, even 18 years after a stadium is built. We attribute this "enduring love" to the impact of promotion and relegation in the English league system, which gives teams the incentive to sustain a consistently higher level of competitive performance following the construction of a new stadium.

[3] Coauthored with Professor Stefan Szymanski

3.1 Introduction

The construction of new stadiums for professional sports teams is often associated with an increase in attendance at the facility: the so-called Honeymoon Effect. Researchers have shown that this effect tends to be of limited duration and that within a decade or so of opening a new stadium, attendance has reverted to the trend. Almost all of this research concerns facilities located in North America. In this paper, we conduct a similar analysis for soccer stadiums in England. In our sample, we find little or no evidence that the Honeymoon Effect ever ends. Instead, we find that the attendance effect is just as strong and statistically significant up to eighteen years after a new stadium is built as it is in the first year; evidence of an "enduring love".[4] However, this is only true for the larger stadiums in our sample (capacity over 20,000). For smaller stadiums, we find no statistically significant effect, either in the short term or in the long term.

The focus of this paper is establishing statistically the size of the impact on attendance of a new stadium in English professional soccer. However, we also believe that such a stark contrast requires us to hazard an explanation. Some might argue that the nature of professional sports in North America and the UK are so different that the comparison is meaningless. There certainly are differences, but then it is also true to say that North American sports are not completely homogeneous, and the previous literature compared baseball, football, basketball and hockey at major and minor league levels.

[4] We thought long and hard about the title for this paper, considering the easy intuition implied by the "Honeymoon Effect". In essence, our paper suggests that the relationship between the stadium and the fans may be long-lasting or even permanent, like a successful marriage. We consulted an expert in comparative literature, Professor Silke-Maria Weineck of the University of Michigan who provided several suggestions. She pointed out that literature in general is less interested in successful marriages and more interested in the many ways in which they fail, which perhaps has something in common with the economics literature. One title adopted for an earlier version of the paper was "The Baucis and Philemon Effect", named for an elderly and happily married couple who were the subject of a poem by Ovid, but this seemed a little obscure. We settled on "Enduring Love", the title of a novel by Ian McEwen, which, appropriately enough for sports fans, carries a double meaning: not only a love that lasts, but also a love which has to be endured.

Professional sports leagues in the two regions have much in common. Their business models rely on revenues generated by matchday sales, sponsorships, merchandise and broadcast rights; their costs derive primarily from wages and capital investment in the form of a stadium. While there are many institutional differences, one of the most important is that North American teams are typically organized according to a "closed league" model, while English clubs operate in an "open league" model (as do professional soccer clubs in most other parts of the world).

In the closed league model, the number of franchises is fixed, and new entry of teams only occurs through expansion determined by commercial considerations. By contrast, in the open model, new entry of teams occurs through "promotion and relegation", a system whereby clubs in lower leagues gain access purely on sporting merit (by finishing the season at the top of their table), replacing clubs that are "demoted" purely because of their poor sporting performance (finishing at the bottom of their league table).

It is commonly argued that a new stadium will provide an incentive for owners to invest in team quality, this argument frequently being advanced by the team owners themselves (see e.g. deMause and Cagan (2008), who review many such claims). Evidence of an impact actually materializing is, at best, mixed. Quinn et al (2003) examined the effect of a new stadium on team winning percentage in the NFL, NBA and MLB. They found no significant effect in the NFL or NBA, but a small effect for MLB. Even if there were no actual improvement in team quality, consumers might believe that promises will be kept. In this case, the honeymoon effect could be a kind of rational bubble, in which there is a temporary boost of interest in the team, until beliefs are revised in the light of actual performance. In a closed league system, team owners have limited financial incentives to follow through on promises of improved quality since the league status of

the team is unchanging, while the end of season ranking of a team makes little difference to the fans, once out of playoff contention.[5]

In the open system, however, a higher league rank can lead to promotion to a higher division. Clubs in higher divisions generate higher revenues, and so can sustain a higher level of performance in the long run. We find that teams with new stadiums do tend to sustain a higher league rank after a stadium is constructed, implying that they may be benefitting from this effect.

The paper is set out as follows. The next section reviews the literature on stadium demand and the Honeymoon Effect. Section 3 describes some of the institutional background to the investment in new stadiums in English soccer. Section 4 describes our data set and estimating model. Section 5 reviews our econometric results and section 6 concludes.

3.2 The Honeymoon Effect Literature

There have been numerous economic studies of the determinants of attendance at professional league sports events, stretching now over several decades. As long ago as 2003, Borland and Macdonald summarized and categorized more than 60 econometric studies of the determinants of attendance at professional sports events. Studies have controlled for the impact of variables such as prices, team quality, uncertainty of outcome, time of day, time of year, and so on. The variable of interest in this paper is the presence of a new stadium, and its effect on attendance over the first two decades of its life.

[5] In a fully rational model, fans would discount the non-credible promises of owners and so the promises would have no effect on attendance. However, in this case, the novelty of a new stadium could be sufficient to generate the honeymoon effect.

We identified sixteen papers in the literature involving some statistical analysis of new stadium effects, dating back to the work of Roger Noll in 1974. The nature of the discussion in this research varies quite widely, but most papers conclude that the honeymoon effect is limited in duration (see Table 1). Most studies found that the impact of a new stadium diminishes over time, and no study found a significant impact after ten years. However, not all studies estimated a trend, and typically the time horizon for the estimates was only ten years. All but one of these studies concern North American leagues.

Table 3-1: Honeymoon Effect literature

	Authors	League[1]	Honeymoon[2] (years)	Horizon (years)	Honeymoon trend
1	Noll, 1974[4]	MLB (1970-71)	11	11	Decline
2	Baade, and Tiehen, 1990[4]	MLB (1969-87)	0	11	None
3	Kahane, and Shmanske, 1997[4]	MLB (1990-92)	5	5	No trend estimated
4	Quirk and Fort, 1997[4]	MLB (1960-82)	5	5	No trend estimated
5	Clapp, and Hakes, 2005[3]	MLB (1950-2002)	8	10	Decline
6	Coates, and Humphreys, 2005[3]	MLB (1961-2001)	8	10	Decline
6	Coates, and Humphreys, 2005[3]	NBA (1961-2001)	9	10	Constant
6	Coates, and Humphreys, 2005[3]	NFL (1961-2001)	0	10	None
7	Clapp, and Hakes, 2005[3]	MLB (1950-2002)	8	10	Decline
8	Leadley, and Zygmont, 2005[3]	NBA (1971-2000)	10	15	Decline
9	McEvoy, et al., 2005[3]	MLB (1962-2001)	Not indicated	75	Decline
10	Zygmont, and Leadley, 2005[3]	MLB (1970-2000)	9	15	Decline
11	Feddersen, et al., 2006[4]	BL (1964-2004)	5	5	No trend estimated
12	Leadley, and Zygmont, 2006[3]	NHL (1970-2003)	8	10	Decline
13	Agha, 2013[4]	MiLB (1985-2006)	5	5	No trend estimated
14	Love, et al., 2013[3]	MLS (1996-2011)	4	16	Decline
15	Gitter, and Rhodas, 2014[3]	MiLB (1992-2006)	10	10	Decline
16	Soebbing, et al., 2016[3]	CH (1996-2007)	5	10	Decline

1. League abbreviations: Major League Baseball (MLB, National Basketball Association (NBA), National football Association (NFA), National Hockey League (NHL), Major League Soccer (MLS), Minor League Baseball (MiLB), German Bundesliga (BL), Canadian Hockey (CH)

2. Reported "Honeymoon" and the duration that variable is statistically significance

3. Research focuses on new stadiums

4. Includes the novelty effect in the model and analysis but is not the paper's focus

5. The authors do not indicate the duration of the honeymoon effect but mentioned that the effect is apparent

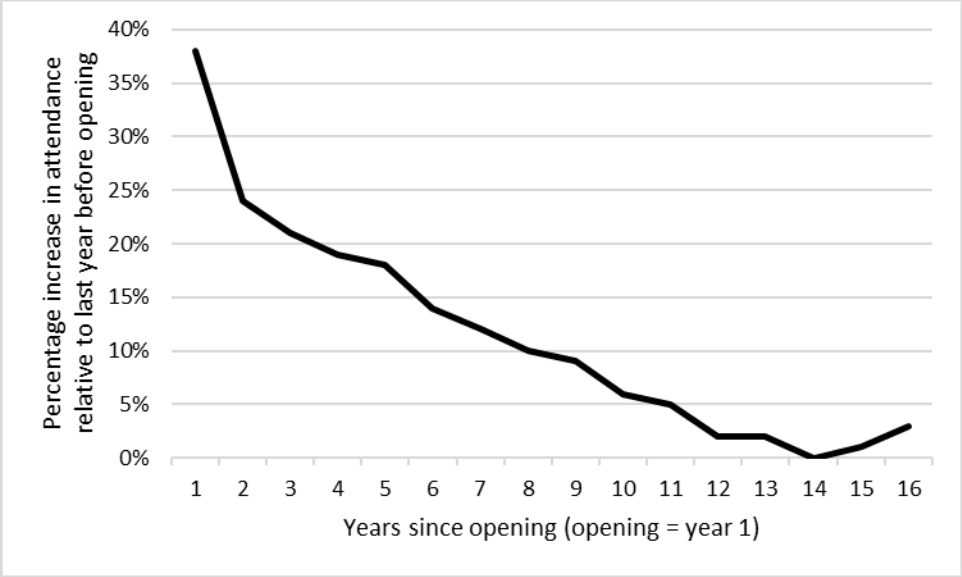
To focus on the length of the Honeymoon Effect, we selected only those papers that estimated a trend in the data. Where necessary, we converted the estimate into a percentage using the league average attendance. Table 2 shows the estimates from seven studies covering eight leagues (some of which relate to the same league but different sample periods). Year 1 refers to the year in which the new facility opened, and the longest post-opening time horizon was fifteen years. Only estimates that are significantly different from zero at the 5% level are reported. All but one of these sets of estimates shows the Honeymoon Effect reliably decreasing over time, and the simple average reported in the final column shows a monotonic decline from year 1 (where the average

jump in attendance is 38%) to year 13, by which point the average affect is zero. The graph of the simple average is shown in figure 1. We now turn to the impact of new stadiums on attendance at English soccer. Only one previous study (Feddersen *et al*. 2006) has considered a league outside North America, and their estimation method assumed a constant effect over a relatively short period (five years).

Table 3-2: Estimated trend of the Honeymoon Effect

	Zygmont and Leadley (2005)	**Leadley and Zygmont (2005)**	**Coates and Humphreys (2005)**	**Coates and Humphreys (2005)**	**Coates and Humphreys (2005)**	**Clapp and Hakes (2005)**	**Leadley and Zygmont (2006)**	**Gitter and Rhoads (2014)**	**Gitter and Rhoads (2014)**	**Gitter and Rhoads (2014)**	**Soebbing et al (2016)**	**Simple average**
Age (1 = year facility opened)	MLB (1970-2000)	NBA (1971-2000)	MLB (1969 - 2001)	NBA (1969 - 2001)	NFL (1969 - 2001)	MLB (1950-2002)	NHL (1970-2003)	MiLB A (1992-2006)	MiLB AA (1992-2006)	MiLB AAA (1992-2006)	Minor League Hockey (1996 = 2007)	
1						44%		50%	22%	36%		38%
2	32%	16%	28%	6%	9%	27%	22%	47%	16%	36%	46%	24%
3	18%	19%	21%	8%	9%	20%	19%	41%	19%	35%	45%	21%
4	19%	22%	19%	6%	8%	19%	18%	40%	11%	27%	44%	19%
5	25%	25%	14%	5%	10%	19%	19%	31%	8%	23%	42%	18%
6	23%	18%	15%	6%	10%	15%	21%	21%	3%	9%	37%	14%
7	17%	13%	12%	4%	6%	15%	16%	21%	3%	8%	29%	12%
8	25%	11%	11%	5%	5%	10%	11%	17%	-2%	7%	21%	10%
9	21%	8%	16%	2%	5%	10%	8%	14%	0%	6%	15%	9%
10	15%	8%	6%	3%	6%	3%	3%	12%	1%	5%	-1%	6%
11	3%	8%	8%	1%	9%	3%	4%				-1%	5%
12	1%	2%										2%
13	-1%	6%										2%
14	-4%	4%										0%
15	0%	3%										1%
16	1%	5%										3%

Figure 3-1: Simple Average of Honeymoon effect on match attendance (% increase relative to base) for North American professional sports teams



3.3 New Stadiums in English Soccer

Soccer is the most popular professional team sport in England, with average annual attendance in the region of 30 million per year across 92 professional clubs in the 2000s. As mentioned in the introduction, the English leagues are organized hierarchically, with the Premier League (20 clubs) at the top, then the EFL Championship (24 clubs), then EFL League One (24 clubs) and then EFL League Two (24 clubs). At the end of each season, three clubs are relegated from the Premier League to the Championship, and replaced by three promoted teams. Likewise, three teams move in each direction between the Championship and League One, four teams between League One and League Two, while two teams are relegated from League Two to the fifth tier, replaced by two teams from the fifth tier.

English soccer experienced a significant decline from the 1950s onwards, which reached crisis proportions in the 1980s. A combination of soccer hooliganism and underinvestment in facilities caused attendance to fall dramatically. Unlike the US, TV revenues were modest before

the 1990s (Baimbridge *et al.* 1996; Forrest *et al.* 2004; Gannon *et al.* 2006), and by the late 1980s a significant number of clubs had entered the UK equivalent of Chapter XI proceedings (Szymanski, 2017). It is commonly accepted that the Hillsborough disaster of 1989, when 96 Liverpool fans were crushed to death because of mismanagement of an antiquated stadium, represented a turning point for the English game.[6] Following a public inquiry commissioned by the government, (Taylor Report, 1990) legislation was passed requiring clubs in the top two divisions to convert to all-seater stadiums. The government also provided subsidies and loans to enable clubs to comply with the legislation.

Since the 1990s, English professional soccer has enjoyed a renaissance. This is associated with substantial increases in broadcasting revenues derived from pay TV, both in the UK and internationally. Demand for attendance has also increased, and while fans have consistently complained about steeply rising ticket prices, annual attendance between 1990 and 2016 increased over 50% in aggregate.

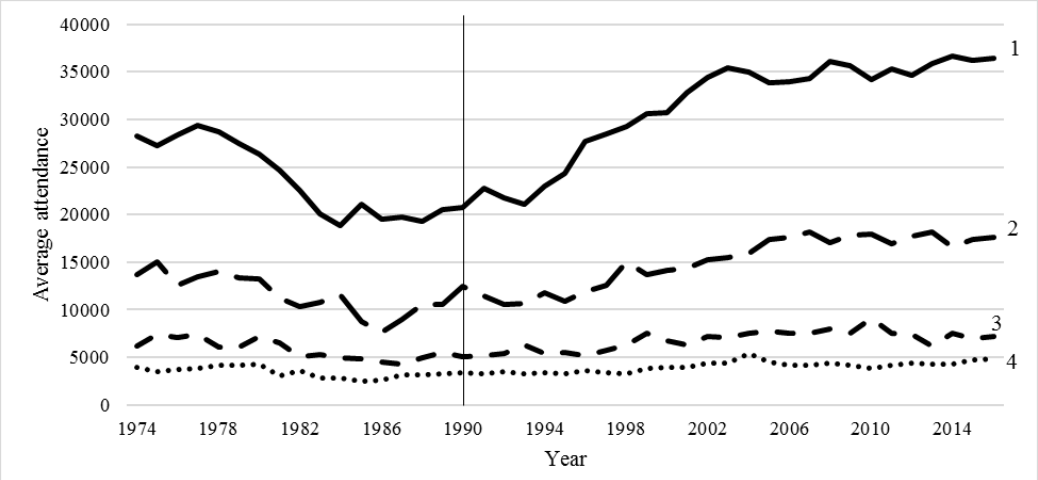
Figures 2 to 4 illustrate attendance trends, between 1974 and 2016, for each of the divisions. Figure 2 shows total attendance, figure 3 shows total stadium capacity and figure 4 shows capacity utilization. In the period prior to 1990 when demand was falling, stadium capacities were reduced, partly as a response to various safety measures that had been introduced. However, as demand increased in the 1990s, stadium capacity remained broadly flat. Consequently, as illustrated by figure 4, capacity utilization rose significantly, especially in the upper two tiers. By the end of the 1990s, the top tier (the Premier League) was playing to over 90% capacity on average, while the second tier (Championship) was at around 70% of capacity. Note that while utilization rose

[6] Although, in fact, recorded attendance started to rise from 1986 onwards.

significantly in the bottom two tiers, demand generally remained below 50% of capacity. Yet, because of the potential increase in demand associated with promotion, few clubs at those levels have chosen to shed capacity.

The poor state of English soccer's antiquated stadiums was often advanced as a causal explanation for the game's problems in the 1970s and 80s. In 1988, 46% of the 92 professional league clubs were playing in stadiums built before 1900, 33% in stadiums built between 1900 and 1914 and 17% in stadiums built between 1919 and 1939. The remaining three stadiums had been built in the first decade after World War Two. More than twenty stadiums suffered bomb damage during that conflict and required reconstruction, of varying degrees of significance, funded in part by the government.[7] More generally, clubs had invested over the decades to expand stadium capacity, but little had been spent on improving stadium quality.

Figure 3-2: Average game attendance by tier (1974-2016)



[7] Manchester United's stadium was completely destroyed and, for four years after the War, played their games at the stadium of local rivals Manchester City.

Figure 3-3: Average stadium capacity by tier (1974-2016)

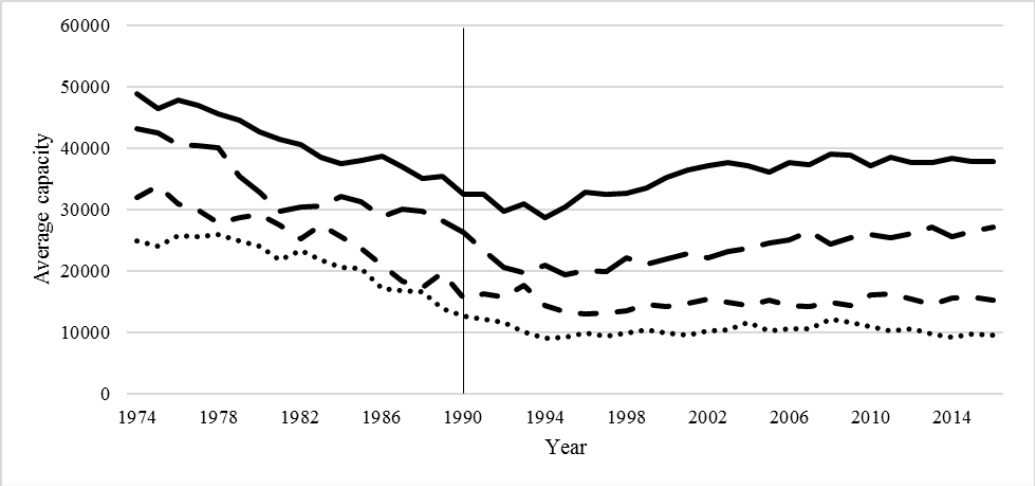
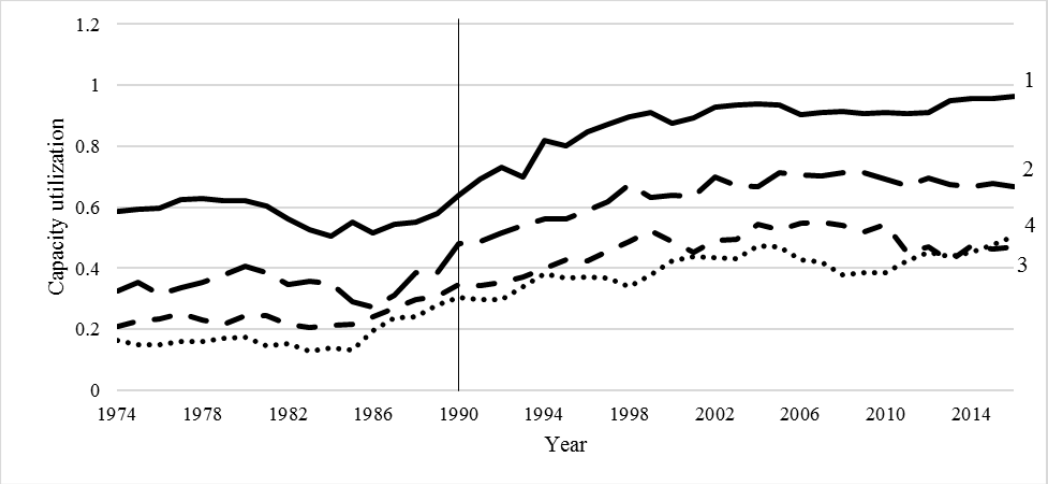


Figure 3-4: Capacity utilization (attendance/capacity) by tier (1974-2016)



By 1975, the physical state of many stadium had become such a pressing issue that the government passed legislation requiring soccer clubs to invest in order to ensure the safety of fans attending games. This was not enough to prevent the Bradford fire disaster in 1985 when 56 fans were burned to death at a game when an old wooden grandstand caught fire (Inglis, 1996).

Since 1988 there has been a boom in the construction of new soccer stadiums. Table 3 lists the thirty-two new stadiums that opened during the period 1988-2012, built for clubs playing in the four English professional soccer leagues.

Table 3-3: Financing, ownership, and estimated and reported costs for clubs with new stadium

Club	Year	Financing / owner	Operator	Capacity	Estimated/reported costs (2015 prices millions)[1]
Scunthorpe United	1988	Private	Scunthorpe United	11,000	12.3
Walsall F.C.	1990	Private	Walsall FC	11,000	10.1
Wycombe Wanderers	1990	Private	Wycombe Wanderers	10,000	7.3
Yeovil Town	1990	Private	Yeovil Town	9,565	7.8
Chester City	1992	Public	Chester City	6,012	6.05
Millwall F.C.	1993	Joint	Millwall Holdings PLC	20,000	28.2
Huddersfield Town	1994	Joint	Kirkless Stadium Development	20,000	28.7
Northampton Town	1995	Public	Northampton Council	7,600	10.4
Middlesbrough F.C.	1995	Private	Middlesbrough Fc	30,000	28.7
Bolton Wanderers	1997	Private	Burnden Leisure (parent)	25,000	47.8
Crawley Town	1997	Public	Crawley Town	5,000	8.8
Derby County	1997	Private	Derby County	33,000	34.9
Stoke City	1997	Joint	Stoke City	28,384	23.4
Sunderland F.C.	1997	Private	Sunderland AFC	42,000	33.3
Reading F.C.	1998	Private	Reading FC	24,200	57.8
Wigan F.C.	2000	Private	Wigan Athletic	25,000	44.75
Oxford United	2001	Private	Oxford United	12,450	30.8
Southampton F.C.	2001	Private	Southampton FC	32,551	44
Hull City	2002	Public	Superstadium (Allamhouse)	25,404	62
Leicester City	2002	Private	Parent Company	32,500	54.2
Manchester City	2003	Public	City Football Group	48,000	166.2
Coventry City	2005	Public	Coventry City (lease)	32,000	147.5
Swansea City	2005	Public	Swansea City	20,000	35.2
Arsenal F.C.	2006	Private	Arsenal (Emirates Stadium)	60,000	538.1
Doncaster Rovers	2007	Public	Doncaster Rovers	15,269	38.5
MK Dons	2007	Private	Inter MK	22,000	60
Shrewsbury F.C.	2007	Private	Shrewsbury Town	10,000	18
Colchester F.C.	2008	Public	Colchester Community Stadium	10,000	17.8
Cardiff City	2009	Private	Cardiff City FC (Holdings)	26,828	51.6
Morecambe F.C.	2009	Private	Morecambe FC	6,402	13.9
Brighton & Hove Albion	2011	Private	The Community Stadium	22,374	109.7
Rotherham United	2012	Private	Rotherham United	12,009	20.7

1. Notes for each of the clubs including data sources appear in Appendix 1

Where possible, we derived the data on construction costs from the financial statements of the soccer clubs, which typically own the stadium. However, in some cases, ownership is held elsewhere and we relied on public records and newspaper reports. The total estimated cost of all the new stadiums was £1.79 billion (in 2015 prices), of which we estimate £515.8 million (29%) was provided from public subsidies (In the appendix we detail the sources from which these figures were drawn). While still substantial, this is a lower subsidy rate than in North America over a comparable period. Long (2012) reports that the average rate of public subsidy for major league stadiums in North America was 61% in the 1980s, 54% in the 1990s and 61% in the 2000s. Comparing the first season in the new stadium and the last season in the old one, these investments increased capacity by approximately 42% on average.

3.4 Data and Estimating Model

We have set out to follow as far as possible the estimating strategy adopted in the Honeymoon Effect literature described above. A key feature of that literature is that it generally controls for wealth and population size through an income variable such as per capita income. One challenge for a comparative evaluation is the relative density of professional clubs (compounded by the absence of territorial exclusivity). England has 92 professional clubs in the top four divisions, serving an area that is between the size of Louisiana and Mississippi. Regional data on income for England at the official "NUTS 3" level is the most disaggregated measure available, dividing the country into 145 regions,[8] and is only available on an annual basis since 1997. This data is available

[8] There are 173 NUTS 3 regions for the UK in total, of which 145 are in England and Wales: Welsh clubs are permitted to play in the English league system.

online from the UK Office of National Statistics. Population data at the NUTS 3 level is available online from Eurostat.

Our data sample covers twenty seasons, running from 1996/97 until 2015/16. Our measure of attendance is the average per game attendance in league competition as reported in the Sky Sports Yearbook, published annually. Over our sample period, the number of home games played annually in each division has been constant at 19 in the Premier League and 23 in the other three divisions. We do not include games played in other competitions such as the FA Cup or the Champions League, which are much fewer in number, since demand for these games is likely to be driven by different factors, for which we cannot easily obtain controls.[9] Stadium capacity and team performance data came from the same source. One measure of team performance is league rank, but this is clearly endogenous. Hence, we use club annual wage spending data taken from the financial statements of the club, which are now freely accessible online at Companies House.[10]

Following the previous literature, we measure the impact of new stadiums on attendance by regressing attendance on a set of controls, based on the variables described below, and a series of dummies indicating the age of the new stadium, from year 1 (the year the stadium opened), up to year 18 after opening. Table 4 lists all of our variables of interest and their summary statistics.

We want to allow for differences in team performance, not only within the same league division, but also across divisions. We do this by taking account of the strict hierarchy in the league system. At the end of each season, each team has a league position (1^{st}, 2^{nd}, 3^{rd}…) which is the usual measure of relative standing. Since the Premier League clubs are at the top of the hierarchy,

[9] For example, many clubs tie season ticket sales to a commitment to buy FA Cup tickets.

[10] https://www.gov.uk/government/organisations/companies-house. The annual wage bill of a club is largely determined before the season starts, but endogeneity issues can still arise. Hall et al (2002) tested for exogeneity of wage spending for English soccer clubs and found that this could not be rejected.

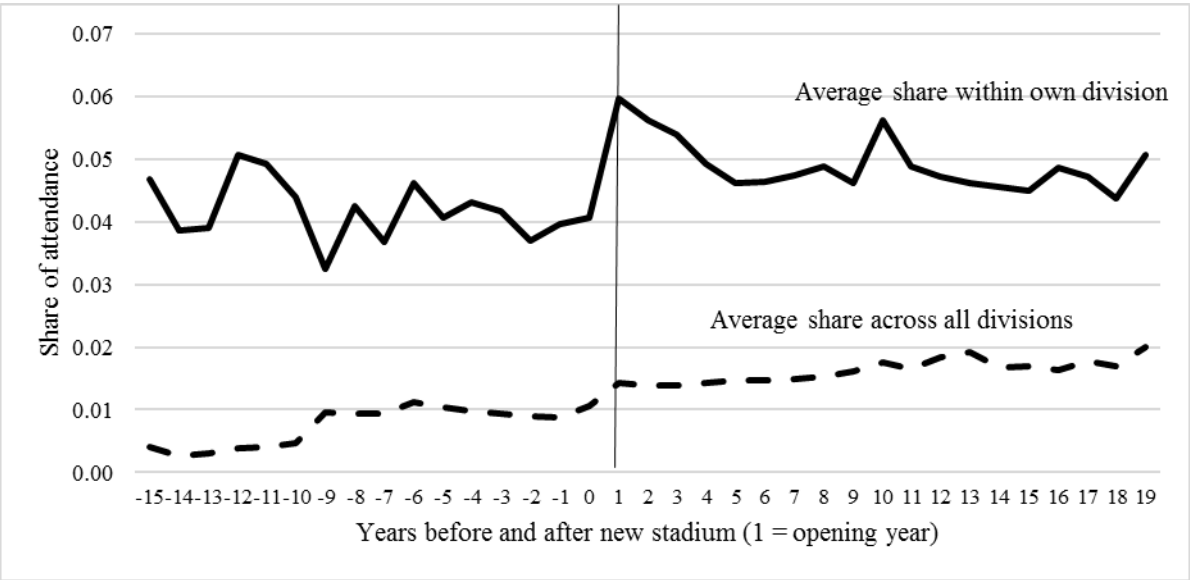
we can say that their league position is also a measure of their rank across the four divisions. For teams in lower divisions then their rank in the system should take account of the divisions above them. Thus, the team in 1st position in the Football League Championship can be assigned rank 21 in the system, the team in 2nd position can be assigned rank 22, and so on. As a result, we can construct a consistent ranking of teams from season to season, even if they play in different divisions (following promotion or relegation). We do not include prices as controls, since these are well known to raise problems of identification (Noll, 2013). Variations in prices across clubs can to some extent be accounted for through fixed effects.

Figure 5 shows the average share of total attendance for clubs with new stadiums, both at the divisional level and across all fours leagues, depending on the age of the stadium. In both cases we can see a clear jump in attendance in year 1, the year that the new stadium is opened. While the average share of division is higher after the opening of the new stadium, there is also some decline, following the initial impact, and in some years, the share falls below the level experienced in some seasons before the opening of the new stadium. However, this fails to take account of the fact that clubs can play in different divisions. When we consider the four divisions together, the share of attendance of clubs with new stadiums is consistently higher than it was before their stadiums were built, and the share appears to be rising over time.

Table 3-4: Description (including summary statistics) and sources for the variable included in the models

Variable	Description	N	Mean	Standard deviation	Min	Max	Data source
Attendance (ATT)	Average per game attendance for each club	1,748	14,587	13,256	1,414	75,826	Skysports football yearbooks
Lag attendance	Average per game attendance for each club in the previous season	1,717	14,574	13,117	1,414	75,826	Skysports football yearbooks
Season (SEAS)	Dummy variable with 2006 as a base year	1,748	2006.5	5.768	1997	2016	Skysports football yearbooks
Rivals (RIVALS)	Other clubs in the NUTS3 region	1,748	4.174	2.019	0	8	Observed using GIS
Tiers (TIER)	Dummy variable with tier 1 (Premier League) as the base	1,748	2.565	1.097	1	4	Skysports football yearbooks
Performance (PERF)	Inversed log of rank * (1-92) divided by 93-rank	1,748	-4.511	1.697	-9.033	0.011	Skysports football yearbooks
Promotion (PROM)	Dummy variable (1) if club was promoted previous year	1,748	0.109	0.312	0	1	Skysports football yearbooks
Relegation (RELG)	Dummy variable (1) if club was relegated previous year	1,748	0.113	0.316	0	1	Skysports football yearbooks
Champions League (CL)	Dummy variable (1) if club was qualified for Champions League previous year	1,748	0.038	0.192	0	1	Skysports football yearbooks
Other European (EU)	Dummy variable (1) if club qualified for the second European competition previous year	1,748	0.038	0.192	0	1	Skysports football yearbooks
Wages (WAG)	Wage bill for club i in season t divided by average wage (all clubs) in season t	1,338	0.998	1.241	0 0.018	7.939	Financial statements
Population	NUTS3 region population (based on 2016 regions)	1,748	419,943	210,659	97,991	1,160,451	Eurostat
GDHI	NUTS3 region Gross Domestic Household Income (based on 2016 regions at current base prices)	1,748	6,212	3,903	956	28,253	Office for National Statistics
GDHI per capita (INC)	NUTS3 GDHI per capita GDHI (based on 2016 regions at current base prices)	1,748	14,639	5,999	6,448	59,612	Office for National Statistics
Capacity	Stadium capacity (full and 95% (capacity$_{it}$ *0.95)	1,748	20,885	12,881	4,057	76,212	Skysports football yearbooks
Capacity groups (CAPBIN)	Five capacity bins based on 10,000 intervals	1,748	3.43	1.228	1	5	Skysports football yearbooks
Diff-in-diff	Dummy variable (1) for clubs with new stadium for all seasons	1,748	0.317	0.466	0	1	Skysports football yearbooks and online sources
Stadium age (AGE)	Dummy variable for stadium age for any stadiums between 1-19 and stadium age grouped into 1-5,6-10,11-15, 16+	1,748	1.965	4.45	0	19	Skysports football yearbooks and online sources
*Capacity groups*Stadium age (CAP*AGE)*	Interaction of stadium age (or groups) and capacity bins	1,748	46,348	118,102	0	935,433	Skysports football yearbooks and online sources

Figure 3-5: Average attendance share of clubs that built a new stadium



For our regression analysis we estimate a difference-in-difference model where the differences are staggered according to the date at which the stadium was opened. This follows the methodology adopted by Stevenson and Wolfers (2006). Our dependent variable is average seasonal league attendance per game. Our controls are local market factors (population and income per capita, as well as the number of clubs located in the same NUTS 3 area) and league performance as proxied by the team wage bill. We also include divisional dummies and dummies for whether the team was promoted or relegated in the previous season, to account for potential encouragement and discouragement effects. We include team and seasonal fixed effects.

Our main variables of interest are a series of treatment dummies reflecting the age of a new stadium. However, we need to take account of the differing scale of the clubs in our sample. The Emirates Stadium that opened in 2006 has a capacity of 60,000 and was built for Arsenal Football Club, a team that played in the top division for the last 100 years. By contrast, the Globe Arena, which opened in 2010 and has a capacity of 6,400, was built for Morecambe FC (founded 1920), a club which was promoted to the fourth tier for first time in its history in 2007, and remained at

this level throughout the remainder of our sample period. To take account of stadium size we divided stadiums into five capacity bins, which were then interacted with stadium age. Table 5 is a cross tabulation that relates the stadium capacity for each club in our dataset, in each season, to the division (tier) in which the club played. As might be expected, clubs with larger stadium capacities tend to play in the higher divisions. Nonetheless, clubs with relatively small stadiums sometimes play in the highest tiers, and clubs with relatively large stadiums are sometimes found playing in the lower tiers. Table 6 illustrates the same relationship but for clubs with new stadiums – the data follows a similar pattern.

Table 3-5: Number of capacity bin observations in each tier

Capacity bins	Tier 1	Tier 2	Tier 3	Tier 4	Total
Bin group 1	148	7			155
Bin group 2	118	134	24		276
Bin group 3	121	210	99	32	462
Bin group 4	13	107	219	522	522
Bin group 5		22	138	425	425

Bin 1=largest capacity quintile, 5=smallest capacity quintile
Bin 1 >40,000
Bin 2 = 30,001-40,000
Bin 3 = 20,001-30,000
Bin 4 = 10,001-20,000
Bin 5 <10,000

Table 3-6: Number of capacity bin observations of clubs with new stadiums in each tier

Capacity bins	Tier 1	Tier 2	Tier 3	Tier 4	Total
Bin group 1	37	5			42
Bin group 2	17	42	7		66
Bin group 3	41	44	22	3	110
Bin group 4		7	13	16	36
Bin group 5			5	9	14

Bin capacity as defined in Table 5

Our estimating equation is written as:

$$ATT_{i,t} = \beta_t(Treatment_i \times Year_t^{1988}) + \delta Treatment_i + \sum_t \lambda_t Year_t + \sum_i \eta_i Team_i + controls_{it} + \varepsilon_{i,t}$$

Treatment is a dummy variable equal to one if the team opened a new stadium since 1988, and zero otherwise, and β_t is the difference-in-difference estimator for year t after the opening of the new stadium. Our control variables are defined in Table 4.

We also consider a variant where we constrain the stadium age coefficients to be equal for successive five-year periods, i.e. years 1-5, 6-10, 11-15 and 16-18 (there are only three periods in the last case).

We consider a number of tests for robustness. First, since some clubs were sold out in some seasons we estimate a Tobit model allowing for capacity constraints. Second, we estimate a model including the lag dependent variable, to allow for persistence effects. Third, to allow for the possibility that pooling the data across divisions is not warranted we estimate a model separately for teams in tiers 1 and 2 separately from teams in tiers 3 and 4. Finally, we estimate the previous model and include the lagged dependent variable. In the main text we report our preferred specification and the Tobit model, in the appendix we report the results of the other models.

3.5 Econometric Results

We report our regression results in two sections. First, Table 7 reports the estimates for the control variables and Table 8 reports the stadium age estimates. Tables 7 and 8 report four versions of our estimating equation. Two are fixed effects estimates: one with and one without stadium age

coefficient constraints; two are Tobit estimates, allowing for the fact that some clubs in some years appeared to operate at full capacity across the season.

The results in Table 7 seem largely intuitive. There are large differences in attendance depending on the division in which a club plays. Team quality/success, as proxied by wages, significantly adds to attendance. Teams that were promoted the previous season enjoy an additional bounce, associated with playing in a higher division, and teams which were relegated the previous season also benefit from a higher attendance than clubs playing in the same division, all else equal. The former effect can be attributed to pent-up demand to watch the team play at higher level, while the latter effect may reflect optimism that the team will rebound and be promoted back up in the near future. Attendance is significantly related to per capita income in the local area. The presence of rival clubs is not significant, perhaps since rivals can both reduce attendance (through substitution) and increase attendance (by generating local interest). Participation in European level competitions (notably the Champions League) does not appear to affect attendance at league games, although clubs that play in Europe are the better quality teams, so any effect may be caught by the wage variable.

The estimated coefficients across these four variants seem relatively stable, with only small differences in the size of the coefficients. The pattern of statistical significance is consistent, across the four variants. The Tobit and Fixed Effects estimates are very similar, although this may be because only a small number of clubs are right-censored in any one season.

Table 3-7: Attendance regression models

	FE with diff-in-diff	FE with diff-in-diff (constrained)	Tobit with diff-in-diff	Tobit with diff-in-diff (constrained)
Rivals	-141.2	-119.7	-154.6	-133.3
	(129.30)	(125.50)	(118.70)	(119.00)
Tier 2	-4,558***	-4,679***	-4,645***	-4,754***
	(331.40)	(317.40)	(305.90)	(302.50)
Tier 3	-6,953***	-7,079***	-7,081***	-7,198***
	(428.20)	(409.40)	(395.60)	(390.40)
Tier 4	-7,703***	-7,796***	-7,849***	-7,941***
	(516.60)	(494.30)	(476.80)	(471.00)
Wages	1,268***	1,219***	1,237***	1,192***
	(227.50)	(219.40)	(209.50)	(208.60)
Promotion	728.4***	653.3***	735.9***	673.8***
	(228.70)	(216.30)	(210.80)	(206.00)
Relegation	776.0***	748.2***	783.2***	755.1***
	(232.40)	(220.20)	(213.50)	(208.90)
Champions League	-765.7	-760.8	-710.1	-713.2
	(616.90)	(597.10)	(569.00)	(568.60)
Other European	79.6	106	47.5	82.23
	(350.70)	(338.60)	(322.70)	(321.60)
GDHI per capita	0.0989**	0.101***	0.0928**	0.0956**
	(0.04)	(0.04)	(0.04)	(0.04)
Diff-in-diff	987.3	1,248	789.9	930
	-2,429	-2,220	-2,227	-2,107
Constant	16,341***	16,262***	16,453***	16,356***
	(2,182)	(2,133)	(2,004)	(2,023)
R^2	0.9778	0.9772		
Observations	1,336	1,336	1,336	1,336
Number of Clubs	96	96	96	96
Right censored			17	17

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We report the estimates for stadium age in Table 8. These estimates are based on our definition of capacity bins (see tables 5 and 6), with bin 1 defined as the reference group. Hence, the figures in the table are the sum of the reference group estimate and the capacity bin estimate. On the left had side of Table 8 are the Fixed Effects estimates, with the Tobit estimates on the right hand side; the

top panels report the estimates for each year, the lower panels reported the estimates when the age coefficients are constrained to be equal for five year periods.

The estimates suggest that there is a large and relatively stable impact of a new stadium on attendance in each of the three largest capacity bins – meaning stadiums larger than 20,000 seats. By contrast, the impact on attendance at the smaller stadiums is, while almost invariably positive, rarely significant at the 5% level or better. For the largest group (40,000+) the average impact is around 10,000 per year, and the effect does not appear to diminish over time. For the second bin (30,000-40,000) the estimated effect is around 7,000 and for the third bin (20,000-30,000) is around 3,000. Most of these estimates are significant at the 1% level. While it does appear that estimates for bin 2 are insignificant in years 16, 17 and 18, this may be due to the small number of observations for these years. The constrained estimates in the lower panels are useful for illustrating the consistency of the results.

Table 3-8: Linear point estimates for stadium age and stadium age groups (Number of observations in parentheses)

	FE with diff-in-diff					Tobit with diff-in-diff				
Age (obs)	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1 (21)	11541***	7979***	3301***	626	1326	11766***	7577***	3406***	588	1202
2 (24)	12778***	7356***	1365	748	1545	12593***	7061***	1477	730	1451
3 (26)	10951***	7958***	3060***	1018	1604	10731***	7686***	3196***	961	1466
4 (26)	11992***	6868***	2737***	-67	1090	11776***	6574***	2852***	-84	975
5 (26)	12386***	5658***	2999***	-884	1554	12162***	5269***	3090***	-923	1419
6 (25)	9347***	4652***	2576***	-998	-669	9162***	4368***	2675***	-1034	-698
7 (26)	7000***	3744***	2790***	1177	62	6828***	3287***	2879***	1125	45
8 (26)	7714***	3948***	3872***	3424	1443	7576***	3619***	3976***	3330	1412
9 (25)	8078***	5574***	3100***	2770	3332*	7865***	5125***	3187***	2665	3414**
10 (23)	6080***	4715***	2418**	2830	2430	5908***	4358***	2503***	2742	2471
11 (21)	10064***	5626***	1719	3105	3186*	9839***	5156***	1815*	3034	3248**
12 (19)	8196***	6343***	2227**	3221	1441	7962***	5866***	2317**	3105	2718
13 (20)	9296***	6634***	1721	1743	1947	9127***	6133***	1805*	1637	2110
14 (21)	9373***	6141***	2763**	1586	2120	9203***	5575***	2872***	1476	2245
15 (18)	8349***	6620***	2994***	1369	2369	8178***	6267***	3082***	1309	2542
16 (16)	9764***	49	3399***	2367*	1785	9568***	-300	3494***	2275*	1925
17 (16)	10554***	1870	2825**	2675*	2256	10359***	1517	2918**	2584**	2415
18 (14)	12615***	-1947	3389**	1920	1359	12411***	-2318	3461**	1810	1489
	FE with diff-in-diff (constrained)					**Tobit with diff-in-diff (constrained)**				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1-5 (123)	11955***	7187***	2800***	739	1694	11843***	6873***	2904***	709	1582
6-10 (125)	7874***	4601***	2962***	1531	1675*	7703***	4249***	3051***	1455	1683*
11-15 (99)	9192***	6317***	2307***	1559	1961*	8999***	5841***	2396***	1452	2402**
16+ (46)	11132***	-251	3125***	1895**	1700	10947***	-597	3208***	1786**	1906

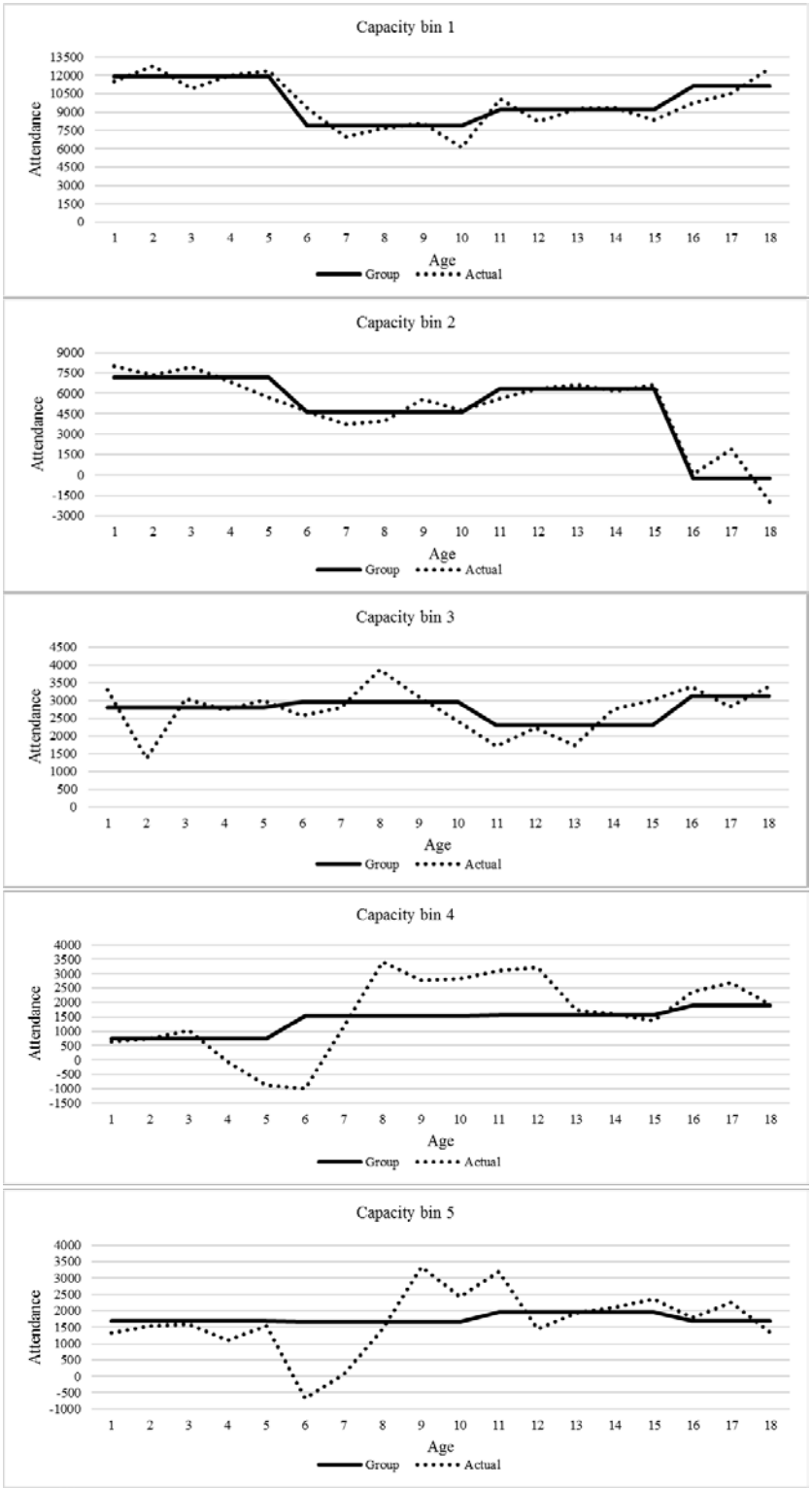
*** p<0.01, ** p<0.05, * p<0.1

Notes: Bin 1=largest capacity quartile, 4=smallest capacity quartile, Bin 1>40,000, Bin 2 = 30,001-40,000, Bin 3 = 20,001-30,000, Bin 4 = 10,001-20,000, Bin 5 <10,000

Figure 6 illustrates the estimated coefficients for each of the bins. The dotted lines show the unconstrained estimates, the solid lines are the constrained estimates. These charts help to demonstrate the consistency of the size of our estimates, and the absence, in general, of any tendency for the initial impact to decline. New stadiums in English soccer really do appear to create an enduring bond with the fans.

Our alternative models (see appendices) suggest that our findings are robust. In each variant, we find the same result: new stadium effects, where they are significant, are sustained and constant.

Figure 3-6: Linear point estimates of attendance effect based on stadium age from year 1 (opening) to year 18, by capacity bin groups



Bin 1>40,000, Bin 2 = 30,001-40,000, Bin 3 = 20,001-30,000, Bin 4 = 10,001-20,000, Bin 5 <10,000

3.6 Discussion and Conclusions

As we suggested in the introduction, we think that one explanation for the difference between our findings and the established literature on the Honeymoon Effect is the difference between the closed league model in North America and the open league system in English soccer. To illustrate this point Figure 7 shows the average league rank before and after the opening of new stadium, from 15 years before opening (-15) to 18 years after. The figure in brackets for each tick on the x-axis is the number of observations for that point in time. The y-axis measures the average rank of clubs with new stadiums – a smaller rank implies a better performance of the team. Three variants are shown on the chart: the solid line represents the set of 22 clubs for which we have attendance data for every season from -5 to +5 years after opening a new stadium. The line with longer dashes represents the average for 11 clubs for which we have data from -15 to +13 seasons. The shorter dashes refer to the complete dataset. In each case, there is a visible trend toward improved performance after the opening of a new stadium. For the larger sample, league rank improves by around six places in the first five seasons after opening (from rank 43 to 37). For the smaller balanced sample of 11 clubs, league rank improves by around twelve places (from rank 33 to 21). Twelve places is equivalent to around half a division, and therefore, depending on the initial position, is quite likely to involve promotion. There is also some evidence of improving league position in the run up to opening a new stadium.

To compare this with the closed league model, we collected data on win percentage, attendance and stadium age for three of the major leagues teams (NFL, MLB, NBA) from 1988 to 2016.[11] Figure 8 shows the average win percentage before and after the opening of a new facility. The

[11] Data sources: Rodney Fort's Sports Economics, https://www.baseball-reference.com/ , https://www.pro-football-reference.com/, https://www.basketball-reference.com/

average win percentage in the "before new stadium" period was 0.496 and in the "after new stadium" period was 0.503; the difference is not statistically significant, even at the 10% level.

Figure 3-7: Average rank for clubs with new stadiums including number of observations in parentheses

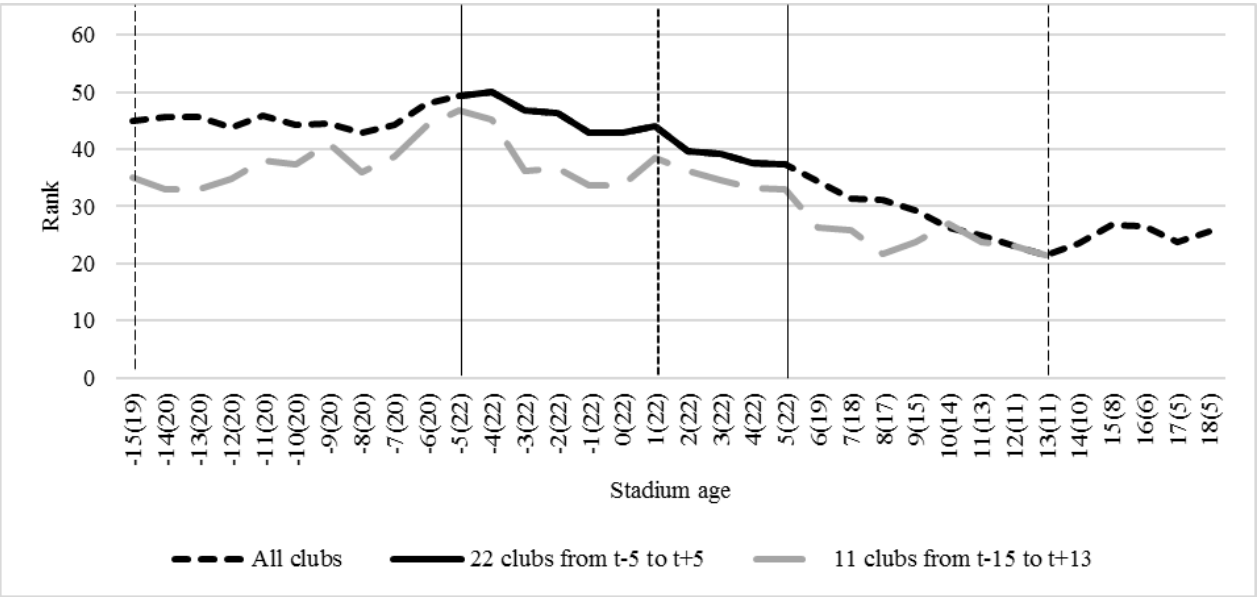
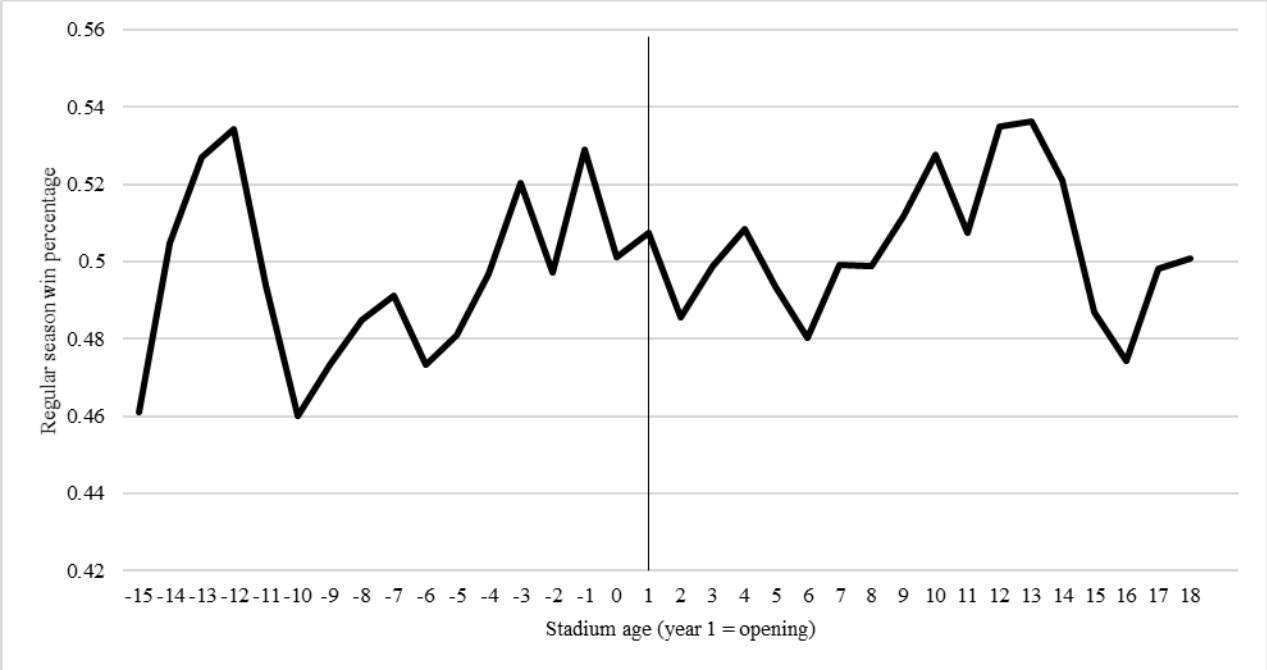


Figure 3-8: Average win percentage of Major League teams before and after opening a new stadium



More formally, Table 9 reports the result of the test of the hypothesis that team performance improved following the construction of a new stadium. We consider three different time horizons: five, ten or fifteen years, before and after the new stadium is built. We find that in professional English soccer we can reject the null hypothesis of no improvement, either measured by rank for any horizon, or measured by divisional status, except in the shortest period. By contrast, in the case of the major leagues, we cannot reject the null hypothesis of no improvement of team performance, measured by win percentage, over each time horizon.

Table 3-9: Change in team performance before and after opening a new stadium

	English soccer		Major leagues
Period Before and after opening of new stadium	**Rank difference**	**Division difference**	**Win percentage difference**
t-5: t+5	6.82**	0.21	-0.007
	(-2.01)	(-1.48)	(-0.60)
t-10: t+10	12.34***	0.42***	0.008
	(-4.81)	(-3.91)	(-0.88)
t-15: t+15	17.26***	0.65***	0.007
	(-7.58)	(-6.66)	(-1.02)

(t-statistics in parentheses)

While our account of the difference between North American leagues and English soccer may seem plausible, some caution is required given that there are many differences between North American leagues and the world of soccer. A good avenue for further research would be to compare effects in other leagues. A follow-up study to Feddersen et al (2006) on German soccer, taking advantage on the longer time period that has now elapsed, could help to decide if the effects identified here can be generalized to other soccer leagues. Likewise, it should be possible to conduct similar studies for national soccer leagues in countries such as France, Italy and Spain.

Research along these lines could help to establish not only whether new stadium effects are more enduring in the context of soccer leagues, but also whether this effect can reasonably be attributed to the system of promotion and relegation. Future studies also need to take into consideration the potential endogeneity between attendance and capacity and the likelihood that clubs building new stadiums are responding to increased demand.

3.7 References

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3.8 Appendix

Table 3-10: Appendix 1: Notes for Table 3

Club	Notes for table 3
Arsenal	A subsidiary company Arsenal (Emirates Stadium) Limited was incorporated in 2000 to build and operate the stadium[1]
Bolton	The stadium was built and operated by the parent company and the 1998 club's account quote the stadium's cost 30,101,525GBP (47,780,198 in 2015 prices)[1]
Brighton	The stadium is operated by a subsidiary company of B&H Holdings that in the 2011 accounts quoted the total project cost was 103million GBP[1]
Cardiff City	The 2010 club accounts state that they (the club) "revalued the stadium to 44.6m on a replacement cost basis..." (p.17)[1]
Chester City	Sold the previous stadium under new ownership and leased the new stadium from the council (based on 1992 accounts "Leasehold Property" in fixed assets)[1]
Colchester	The stadium was built and owned by the council (council accounts 2008/09) who set up a company to manage the facility[1]
Coventry City	Stadium built by public subsidiary (Coventry North Regeneration Limited) with additional property development[1,2]
Crawley Town	Crawly were promoted to the 2nd division in 2011/2012 season, the stadium was built as a multipurpose facility[2]
Derby County	The stadium was built by a holdings company affiliated with the team and has the same parent company[1,2]
Doncaster Rovers	The stadium was built by the municipality amid the financial stress of the club, in 2012 the club took over operation of the facility from a municipal subsidiary[2]
Huddersfield Town	Kirklees Stadium Development Limited was established to oversee, develop and manage the stadium that was also partially funded by the public sector and grants following the Taylor report[1,2]
Hull City	The stadium was built by the city for both rugby and football (soccer) with money received from the city's share in a phone company[1,2]
Leicester City	Privately built by Leciester City PLC, but after petition for administration stadium was owned by American Pension Fund Company (Loaned the money to the club)[1,2]
Manchester City	The club is a subsidiary of City Football Group (established in 2013), the stadium was originally built for the Commonwealth Games by the council and national lottery (Sport England) and is now leased by the club who invested 20million GBP to expand capacity[1,2]
Middlesbrough	The stadium was built as a response to the new requirements following the Taylor report and inability to change the old stadium to all-seating without substantial decrease in capacity[2]
Millwall	Sold the old stadium to help finance the new one (1992 accounts) in addition to using grants (Taylor) and some local financing[1,2]
MK Dons	The stadium was financed by the owner therefore details on the cost of the stadium are lacking[2]
Morecambe	Invested in facility to introduce alternative income streams (2011 accounts)[1]
Northampton Town	Previously played in a cricket ground, estimated cost is based on unofficial sources. More recent events including substantial public loans misappropriated by the developer overseeing renovations mar the stadium's development[2]
Oxford	The stadium was built by the club, made feasible after the club were bought by Kassam (owner)[2]
Reading	Financed by the club who built a multipurpose facility partially financed by the development of the old facility[2]
Rotherham	The stadium was financed by the owner (club) who owns the ultimate parent company and included a loan from the council at the excess of 5million GBP[1,2]
Scunthorpe United	Sold the old stadium and grounds (Old Show Ground) for 2.5 million GBP to fund the new one that cost 2.1 million. Despite general trends and obligations, Scunthorpe built stand-only stands[2]
Shrewsbury	The stadium was eventually built after close to a ten year delay due to planning permits[2]
Southampton	The stadium was financed by the club that took a loan from another holdings company (St. Mary's Stadium) with the same parent company[1]
Stoke City	Originally partially owned by the council and club, the club bought the council's stakes in the stadium in 2007[2]
Sunderland	In the 1997 accounts the cost was estimated at 500GBP per seat (500*41600=20,800,000) but other estimates were lower (14million)[1]
Swansea City	The cost of the project was 41.82 based on a cabinet (March 3rd 2005) report but included development outside the facility as well. In 2018 Swansea took full control signing a new lease agreement[1]
Walsall	According to the 1988-1990 accounts, the club disposed of the old stadium and property (that was under freehold) and acquired the new stadium while leasing the property[1,2]
Wigan	The owner (Whelan) financed the facility therefore the club accounts do not include the stadium investment[2]
Wycombe Wanderers	Wycombe Wanderers used funds from the sale of the old ground to finance the new stadium[1,2]
Yeovil Town	According to the 1995 accounts, the property including the stadium is under freehold and partially financed by the sale of the old property. Since 2006 the stadium's ownership was transferred to Huish Park Stadium Partnership Limited, owned by Yeovil Town's primary shareholder[1]

1. Cost estimates, reported costs and ownership are based on club or other financial accounts, as well as other official sources

2. Cost estimates and ownership are based on reported costs from other sources

Table 3-11: Appendix 2: Attendance model including the lag variable, FE for only Tier 1 and Tier 2, FE for only Tier 3 and Tier 4, including a difference-indifference variable

	FE with diff-in-diff and lag	Tobit with diff-in-diff and lag	FE with diff-in-diff (Tier 1 and Tier 2)	FE with diff-in-diff and lag (Tier 1 and Tier 2)	FE with diff-in-diff (Tier 3 and Tier 4)	FE with diff-in-diff and lag (Tier 3 and Tier 4)
Rivals	50.51	42.65	-133	117	-166.6	-224.5**
	(95.2)	(87.4)	(198.9)	(143.4)	(118.2)	(103.6)
Tier 2	-3,137***	-3,209***	-4,622***	-2,598***	-	-
	(248.0)	(228.9)	(431.6)	(321.3)		
Tier 3	-3,836***	-3,934***	-	-	-	-
	(330.6)	(305.2)				
Tier 4	-3,516***	-3,620***	-	-	-433.3***	-6.269
	(403.9)	(372.4)			(150.9)	(141.2)
Wages	79.6	45.98	1,476***	261.9	4,864***	2,244***
	(171.6)	(158.1)	(286.0)	(211.6)	(898.0)	(812.6)
Promotion	1,688***	1,708***	955.0***	2,394***	381.2**	343.1**
	(171.0)	(157.8)	(341.4)	(252.5)	(183.2)	(160.6)
Relegation	-699.1***	-689.9***	1,534***	-1,415***	-56.3	-368.0***
	(178.8)	(164.2)	(454.2)	(348.2)	(139.4)	(126.5)
Champions League	-370.5	-324.6	-1,176	-611.3	-	-
	(453.6)	(418.5)	(743.3)	(535.2)		
Other European	-190.7	-212.3	-6.956	-165.2	-	-
	(257.9)	(237.2)	(417.9)	(300.6)		
GDHI per capita	0.0149	0.0136	0.112**	0.0327	-0.167	-0.0174
	(0.030)	(0.027)	(0.052)	(0.038)	(0.106)	(0.092)
Diff-in-diff	628.2	527.8	8,434***	3,236***	484.0	219.9
	(1785.0)	(1635.4)	(1426.0)	(1047.0)	(1215.0)	(1015.0)
Lag attendance	0.608***	0.609***	-	0.638***	-	0.438***
	(0.020)	(0.018)	-	(0.026)	-	(0.046)
Constant	7,002***	6,984***	30,444***	11,022***	9,200***	4,066*
	(1632.0)	(1500.0)	(1956.0)	(1615.0)	(2354.0)	(2097.0)
R^2	0.988		0.9672	0.983	0.9573	0.9649
Observations	1,336	1,336	801	801	535	529
Number of Clubs	96	96	68	68	75	75

Table 3-12: Appendix 3: Linear point estimates for stadium age and stadium age groups when including lag attendance and models including only Tiers 1 and 2, and only Tiers 3 and 4 (Number of observations in parentheses)

	FE with diff-in-diff and lag					Tobit with diff-in-diff and lag				
Age (obs)	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1 (21)	14685***	9594***	3700***	1468	2535*	14666***	9329***	3768***	1450*	2457*
2 (24)	5706***	3294***	-275	104	1529	5518***	3087***	-196	91	1459
3 (26)	3758***	3215***	2369***	314	1840	3539***	3029***	2460***	273	1753
4 (26)	4852***	2285***	1503**	76	1796	4636***	2080***	1580***	59	1732
5 (26)	4966***	2022**	2036***	-658	1937	4754***	1763**	2099***	-694	1860
6 (25)	2457**	1291	1680**	972	-1386	2256**	1098	1746***	956	-1416
7 (26)	1406	358	1976***	1677	503	1231	52	2031***	1645	497
8 (26)	4289***	2570***	2413***	1724	874	4145***	2347***	2482***	1684	851
9 (25)	4365***	3127***	1404*	1257	1391	4151***	2821***	1465**	1205	1435
10 (23)	3358**	3741***	673	1757	585	3178**	3499***	729	1718	607
11 (21)	7138***	2796***	758	1900	1217	6905***	2464***	827	1860	1248
12 (19)	2040	3125***	1878**	1992	-283	1800	2799***	1932***	1951	541
13 (20)	3584*	2941***	452	1025	839	3402**	2597***	510	957	934
14 (21)	3702**	2383**	1526*	1056	155	3518**	1996*	1594**	986	259
15 (18)	2673	3503*	1711**	1178	696	2457	3232*	1758**	1140	805
16 (16)	4256**	-962	766	1258	243	4053**	-1193	829	1200	324
17 (16)	4264**	2527*	748	1727	1142	4062**	2278*	813	1669*	1250
18 (14)	6046***	-2359*	1789*	390	170	5841***	-2605**	1832*	309	250
	FE with diff-in-diff and lag (constrained)					**Tobit with diff-in-diff and lag (constrained)**				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1-5 (123)	7661***	4228***	2127***	529	1796*	7467***	3991***	2206***	507	1711*
6-10 (125)	3926***	2569***	1970***	1488*	728	3734***	2301***	2036***	1439*	730
11-15 (99)	4949***	3442***	1589***	1252	647	4717***	3076***	1653***	1176	983
16+ (46)	6011***	-225	1424**	1145*	761	5791***	-491	1485**	1062*	921

	FE with diff-in-diff (Tier 1 and Tier 2)					FE with diff-in-diff and lag (Tier 1 and Tier 2)				
Age (obs)	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1 (21)	11932***	7925***	4309***	11932***	11932***	15301***	9640***	4482***	15301***	15301***
2 (24)	13387***	7178***	577	13387***	13387***	5555***	2663***	-2521*	5555***	5555***
3 (26)	11468***	7626***	4078*	2769	11468***	3617***	2795***	3955***	702	3617***
4 (26)	12421***	6621***	2702*	12421***	12421***	4827***	1518	1525	4827***	4827***
5 (26)	12601***	5672***	3039**	12601***	12601***	4741***	1800*	2298**	4741***	4741***
6 (25)	9516***	4406***	2467*	9516***	9516***	2333*	1009	1783*	2333*	2333*
7 (26)	6918***	3753**	2259*	6918***	6918***	1454	-275	1803*	1454	1454
8 (26)	7822***	4653***	3141**	7822***	7822***	4063***	2346**	2269**	4063***	4063***
9 (25)	8186***	5721***	2542*	8186***	8186***	4191***	2061	1313	4191***	4191***
10 (23)	5796**	6228***	1978	5796**	13643***	3423**	3255**	728	3423**	4578
11 (21)	10031***	5586***	1185	10031***	10031***	6936***	2148*	871	6936***	6936***
12 (19)	8271***	6021***	1405	8271***	11445**	2010	2761**	1827*	2010	2820
13 (20)	9403***	6472***	1535	8502*	9403***	3677*	2541**	902	2565	3677*
14 (21)	9439***	6065***	3371**	9439***	9439***	3633*	2048	2241*	3633*	3633*
15 (18)	8591***	6908**	2984*	8591***	8591***	2934	3240	1600	2934	2934
16 (16)	9658***	-5	1918	9658***	9658***	4207*	-1566	308	4207*	4207*
17 (16)	10485***	1966	1719	10485***	10485***	4470**	2365	394	4470**	4470**
18 (14)	12404***	-2098	2318	2723	12404***	5996***	-2856*	1537	801	5996***

	FE with diff-in-diff (Tier 1 and Tier 2) (constrained)					FE with diff-in-diff and lag (Tier 1 and Tier 2) (constrained)				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1-5 (123)	12396***	6917***	3045***	2901	12396***	7956***	3890***	2430***	1254	7956***
6-10 (125)	7822***	4816***	2434**	7822***	11382***	3987***	2159***	1835**	3987***	7059**
11-15 (99)	9188***	6034***	1819*	6520*	9188***	5121***	3095***	1654**	4763	5121***
16+ (46)	10912***	-537	1670	2736	10912***	6223***	-655	805	1583	6223***

	FE with diff-in-diff (Tier 3 and Tier 4)					FE with diff-in-diff and lag (Tier 3 and Tier 4)				
Age (obs)	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1 (21)	4	4	1555**	1737***	4	560	560	801	1872***	560
2 (24)	296	296	1665**	1623**	296	129	129	-68	1059*	129
3 (26)	271	271	2994***	866	271	149	149	1302**	657	149
4 (26)	-295	-295	1882**	820	-295	-63	-63	366	684	-63
5 (26)	-202	-202	1433*	329	-202	131	131	-27	-49	131
6 (25)	836	836	700	-8	836	433	433	-390	797	433
7 (26)	807	807	1931**	732	807	447	447	962	1019	447
8 (26)	943	943	5475***	1482	943	536	536	3418***	1006	536
9 (25)	-236	-236	-236	607	1316	986	986	986	166	959
10 (23)	1344	1344	1344	867	1344	948	948	948	603	948
11 (21)	1666**	1666**	1666**	1651	1666**	941	941	941	1294	941
12 (19)	732	732	4170**	2215**	732	637	637	1507	1657	637
13 (20)	1303	1303	1549	1539	1303	899	899	-1699	691	899
14 (21)	1070	1070	1176	416	1070	590	590	-591	-167	590
15 (18)	1285	1285	2437**	1313	1285	817	817	969	806	817
16 (16)	910	910	4726***	2143***	910	572	572	1986	1211*	572
17 (16)	1235	1235	4748***	2783***	1235	966	966	1366	1686***	966
18 (14)	755	755	4457***	690	755	575	575	1064	173	575

	FE with diff-in-diff (Tier 3 and Tier 4) (constrained)					FE with diff-in-diff and lag (Tier 3 and Tier 4) (constrained)				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
1-5 (123)	419	419	2122***	1375***	419	398	398	648	1096***	398
6-10 (125)	1159**	1159**	2040***	843	1159**	773*	773*	904	905*	773*
11-15 (99)	1228**	1228**	1290	1374**	1228**	731	731	-141	911*	731
16+ (46)	1044*	1044*	3707***	1597***	1044*	766	766	1407	883**	766

Chapter 4. The Public Finance Debate: Sport Venue Finance, Municipal Capitalism and Public Goods

Abstract:

North American cities continue to invest municipal capital or allocate publicly owned land for sport facilities despite the criticism regarding the scale of the public regional benefits. This paper posits that a public goods approach to explain the allure of allocating resources has not been successful in predicting behavior. Building towards the presentation of an alternative theoretical perspective, this paper reviews the past research relative to public investments in sport venues. I identify how previous studies discussed and attempted to understand the rationale behind publicly financed facilities. A traditional framework that focuses on public and merit goods maybe less valuable in understanding the actions of governments as a result of (1) the monopolized structure of North American professional sport and (2) the increasing intra-regional competition for economic activity resulting from the absence of tax-base sharing programs. As a result, a focus on municipal capitalism provides a more useful paradigm to explain what is taking place and how best to evaluate the policy choices confronting cities. Public goods theory provides some necessary insights but in the current environment, it is far more likely that the costs to maintain or attract a franchise stem from entrepreneurial agendas rather than the provision of (local) public goods. Future analysis of stadium finance should therefore focus on municipal capitalism and urban entrepreneurialism rather than examine these projects from a neoclassical public finance theoretical approach.

4.1 Introduction

North American cities continue to spend municipal capital or allocate publicly owned land for sport facilities primarily used by the private sector. These expenditures persist despite the criticism voiced in the academic literature regarding the regional benefits for the public sector from these incentives (Delaney & Eckstein, 2007). From a theoretical perspective, governments should invest in those assets and activities that produce public or merit goods. The on-going interest in public sector investments to secure a team's presence could suggest to some that civic leaders are ignoring the classical framework for allocating who gets what (Key, 1940), and the traditional definition of public goods and public finance (Samuelson, 1954; Musgrave, 1959). This paper, however, posits that a public goods approach to understanding the theory behind governments' on-going spending to build homes for professional teams is inappropriate. A theoretical framework anchored by municipal capitalism (whereby the public sector is more of an "active capitalist" (Chapin, 2002)) and urban entrepreneurialism concepts could well be more helpful in predicting and explaining the on-going investment patterns by governments.

Building towards the presentation of an alternative theoretical perspective, this paper reviews the past research relative to public investments in sport venues. Pre development formative studies focus primarily on decision-making processes to understand the extent to which the public or elites are involved and controlling the investment decision. Post-hoc analyses usually compare outcomes with initial proposals in an effort to understand returns to the public sector. Both analyses rely on economic, urban development, and governance theories and either refute or acknowledge the justifications used by public stadium finance proponents. From these two groups of assessments of sport venue development, two theories of particular interest to this paper have emerged. The first is the neo-classical public goods theory anchored to the seminal work of

Samuelson (1954) and Musgrave (1959). As opposed to public goods, researchers less explicitly discuss the second theory, municipal capitalism and entrepreneurship, despite its relevancy (Chapin 2002). It may well be that both are instructive and useful; however, my interest is in finding a theoretical framework that is more helpful in explaining why civic leaders continue to allocate resources for privately used sport facilities. I proceed from the point that public and civic leaders understand the criticism of these investments that produce minimal regional economic growth, and the victimization of the public sector because of the cartel structure of the sport leagues. The persistent investments by the public sector if one adheres to public goods theory would suggest that only elite control perspectives explain the on-going investments. I argue that a focus on municipal capitalism provides a critical framework from which to understand the use of public dollars for professional sport venues.

The empirical part of the research is an analysis of 116 previous studies that discussed professional sport facility development. The papers examined include econometric studies, stakeholder analyses, contingent valuation methods, theoretical models, text analyses and other research methods mentioned in the following sections. I categorized the studies to distinguish between those that explicitly discuss public goods and those related to the recent interest in using the concepts of municipal capitalism and entrepreneurship. These perspectives are utilized to explore the enhanced value of using municipal capitalization as a perspective to understand the allocations made by the public sector. Through this review, I identify how previous studies discussed and attempted to understand the rationale behind publicly financed facilities. In summary, my goal is to provide a different theoretical framework for future assessments of public investment in the facilities used by professional teams. I do not suggest that public finance is justified given the current monopolized structure of North American professional sport, but rather

seek to explore rational responses within a non-market situation. That response, usually assessed from a public goods perspective is not meaningful given the market conditions that confront cities for a privately produced product with both externalities and intrinsic value for a society.

The paper is divided into seven sections Section II is a brief review of public goods and urban entrepreneurialism. Section III outlines the methodology. Section IV is the analysis of the 116 peer-reviewed papers. Section V summarizes the findings on stadium finance and the two main theories discussed in this research. Section VI reviews recent sport facility finance and categorization. Section VII presents final observations and suggestions for future research.

4.2 Public Goods and Municipal Capitalism theories

The neoclassical public goods (Samuelson, 1954) and more recent entrepreneurialism (Harvey, 1989) theories discuss different public finance rationales in an attempt to clarify how best to allocate the public sector's resources in contrast to the uses of private capital. I outline and elaborate on the theories in this section, but it is important to distinguish the differences between the two. Broadly, the public goods approach proposed an explicit framework that determines the appropriate conditions for the use of public funds for either those goods and services that while beneficial or valuable were unlikely to be produced at satisfactory levels by the private sector. The resulting market failure leads to a real welfare loss Merit goods are those that could be produced by the private sector, but a society deems would lead to less welfare or biased distribution patterns either of which is an undesired outcome. In contrast, a focus on municipal capitalism and civic entrepreneurialism (market-based activities performed by the public sector) focuses on the public sector's pursuit of (1) human and economic capital for a particular region or city that is competition with other regions or cities and (2) the redistribution of regional economic activity to correct fiscal

and social imbalances. In pursuit of either of these two objectives, the public sector adopts business-like investment and development approaches complementing their other responsibilities for the provision or production of desired levels of merit goods.

4.2.1 Public goods

Public goods theory was formulated to illustrate why market failure exists and reduced welfare levels that without collective action societal welfare levels decrease. Anchoring this perspective are two fundamental perspectives regarding the nature of goods and services for which consumption is rival and for where exclusion is possible will be produced by the private sector (Samuelson, 1954). What the government should produce or provide then should be defined or limited to those goods and services that do not meet these criteria. In the absence of collective action an undersupply will result (Bergstrom, Blume, & Varian, 1986). This likelihood suggests that the public sector assumes the financier role if the product is considered as a public good.

Pure public goods are a rarity. Samuelson's (1954) theory of public goods is highly restrictive (Buchanan, 1999). Additionally, the original theory focused on central government activities, and not on local governments that provide many of the goods and services that residents rely upon for their daily lives (Tiebout, 1956). Various extensions to the public goods theory include Buchanan's (1965) 'club goods' theory and local club goods (Stiglitz, 1977). Club goods as opposed to public goods are those goods and services that have some publicness, but for which exclusion may exist. One of the distinctions in public goods theory was the contextualization of the theory to the local market. So rather than discussing pure public goods, some attention was devoted to local public goods that are provided locally with benefits confined to a specific space aligning with pre-determined spatial boundaries. People will choose to live in a community based on their public goods preferences and live with people with similar tastes, given an optimal amount

of communities and hence their location defines the boundaries of the club (Batina & Ihori, 2005). One example of a local club good is non-exclusionary open spaces that the private sector are likely to underprovide but are viewed as a desired commodity in cities (Geoghegan, 2002) and which are available only to residents of a particular city or neighborhood.

Musgrave and Musgrave's (1989) discussion of merit goods broadened the theory of public goods. A government, reflecting on inequities or undesirable distributional patterns, could consider providing other goods that are not necessarily pure public goods. These exceptions had special merit but actually made it possible for different communities to offer more, or less services, depending on local perspectives of merit. In some ways, the inclusion of merit goods into the framework created a situation that was more similar to what Tiebout (1956) envisioned. Public choice theory envisioned local governments differentiated themselves by the mix of goods and services provided, and the taxes (prices) charged for a particular combination of available goods and services.

There are scholars who suggested that local public goods, as opposed to pure public goods, are non-exclusionary but may be characterized as examples of rival consumption as a result of mismatches between demand and supply (Bergstrom & Goodman, 1973; Oates, 1988). This is before the issue of boundaries is introduced resulting in demand for the quality of services from residents of one community that does not have sufficient wealth to produce the level of services available in an adjoining community. Either way, in both the local and national context despite the optimality of public goods, the provision of public goods is not exempt of self-interest behavior, "free riders," and equity issues (Kim & Walker, 1984). Local public goods supplied and paid for by one district in a decentralized system cannot prevent people from other districts consuming the public goods and enjoying spillovers without paying (Besley & Coate, 2003). Similarly, there are

goods that should not be denied to residents of other cities. Equity issues also arise when different levels of local public good are available to different sets of citizens based on the residential properties they can afford (Anas, Arnott & Small, 1988). Governments cannot avoid "free riding" because of the non-exclusionary nature of the goods, nor should they be able to exclude those from areas that have less access to the revenues needed to produce goods and services.

4.2.2 Municipal capitalism and urban entrepreneurialism

Local governments once focused only on urban managerialism which meant providing services designed to maximize residents' social welfare. That singular focus shifted to include a more entrepreneurial approach a result of decentralization patterns (Lauermann, 2018). These shifts were most noticeable as cities transitioned from the industrial to the post-industrial era (Doucet, 2013). Local leaders faced increasing inter-city competition for revenue and economic activity because of federal budget cuts, increased demand for social amenities, redistribution of economic activities outside core cities, and the increased mobility of industries (Cox. 1995; Healey, 1998 ; Weber, 2003, Ederington *et al*., 2005). In order to accommodate these changes and respond to increased regional competition in the midst of changing economic conditions, cities adopted entrepreneurial and business-like approaches to urban governance and development (Harvey 1989). Cities traditionally sought to create better and more appealing living and work environments but the changes in governance included an increased attention to development and partnerships with the private sector and a diminished importance of local provision of welfare (Hall & Hubbard, 1996 ;Hubbard, 1996).

Researchers interpret urban entrepreneurialism and municipal capitalism in several ways and do not have a definitive definition but rather describe the changes that local governments experienced in response to the changing structure of economies and a need focus on revenue

enhancement (Leitner, & Garner, 1993; McGuirk, & MacLaran, 2001). Because of the diverse interpretations of urban entrepreneurialism as part of local politics and policy-making, analyses of what portray successful entrepreneurial cities are also diverse (Cox, 1991; Boyle, 2011). It is apparent from a collective reading of previous studies that public officials were inclined to focus their attention on investment in city branding projects, operating a government more like a business, and encourage private investment (Box 1999). In order to encourage private investment, cities became more likely to provide the private sector with greater incentives and public resources to attract human and physical capital and increase local revenues from taxation and civic "boosterism" (Britton, 1991; Stoked, 2007). In the following paragraphs, I refer to municipal capitalism and urban entrepreneurialism in the same context as they both address the aforementioned structural shifts in governance and fiscal capital relevant for this study. Table 1 broadly summarizes and compares the two theories and in the last row mentions the possible relationships between the theories and sport facility development that I will revisit later on in the paper.

Table 4-1: Comparison between public goods and municipal capitalism theories

Theory	Public goods	Municipal capitalism and entrepreneurialism
Objective	The provision of public goods and use of public funds and taxation	Inter-city competition and attract capital
Theoretical framework	Non exclusionary and non rivalrous goods that fit the criteria for public expenditure	Public sector business-like approach and governance modes with increased diversified development agendas to boost local revenues
General analysis	Categorizing Public vs Private goods and different types of goods and government levels	Governance shifts and analyzing the implementation of objectives set by public/private partnerships
Outcome	Public capital depends on market conditions and necessities	Manifestation depends on aggregate tangible and/or intangible outcomes and the governance mechanisms
Conclusion in relation to sport investment	Public facility and presence of a franchise as a public good that could justify public incentives	Capital investment in a facility as a growth mechanism and social amenities such as civic pride

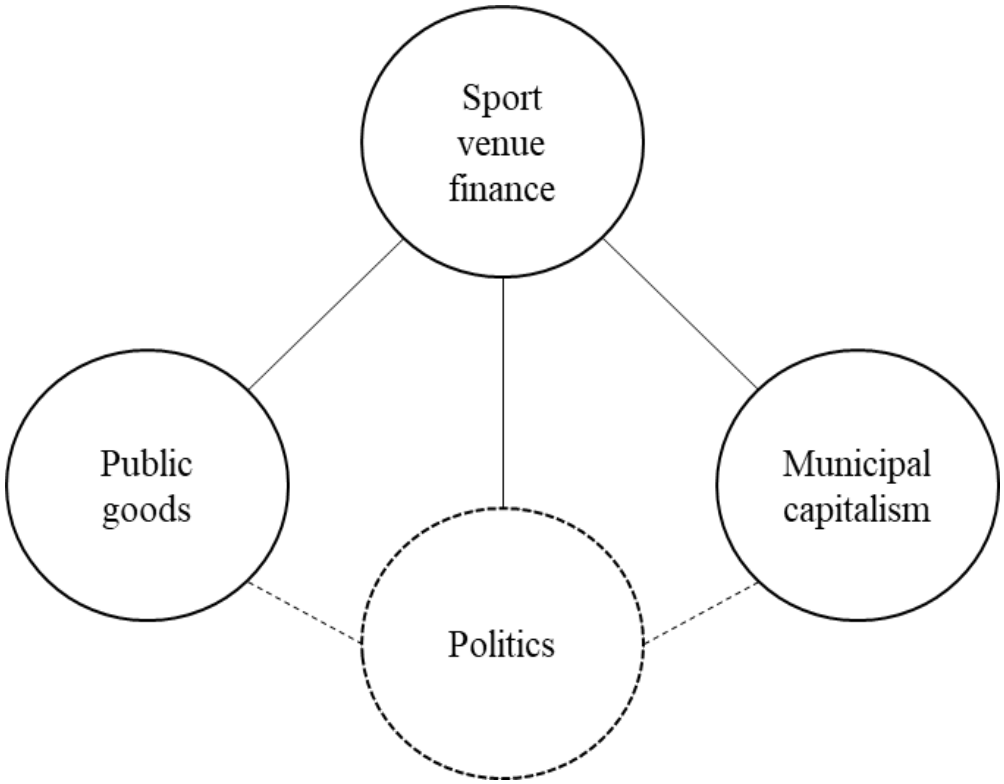
Of the two theories, I argue that it is likelier that an investment in a sport facility is an example of an entrepreneurial approach rather than a necessary expense responding to a market failure. There is the other important distinction between the categorization of the facility and the franchise. It is apparent that any reference to public goods in the sport industry addresses the franchise rather than the facility itself. Whereas the entrepreneurial approach could also discuss the amenities of the facility regardless of the presence of a franchise.

4.3 Methodology

The review previous studies discussing sport venue finance makes it possible to present a brief empirical descriptive analysis of recent trends in the development and financing of new facilities. I collected the literature by searching for studies discussing sport facility development and finance in leading journals and general search engines. My analysis includes 116 peer-reviewed studies from economic, urban studies, law and other social science journals. The studies included those

where the conclusions address publicly financed professional sport facilities or the study explicitly mentioned it as one of the primary subjects discussed in the paper. While some papers may not be included, I surveyed the references in various papers in order to identify missing literature that may be relevant and that was not identified during the initial search. I categorized the studies based on their research focus, primary theories, research methods, unit of analysis, and if they referenced public goods. I base my categorization roughly on previous text analyses such as the one used by Borland and Macdonald (2003). I focus on the references in the literature associated with the public goods and municipal capitalism theories. Ultimately, the analysis reveals how previous studies addressed the financing predicament and how sport development studies can be categorized into three hypothesized primary groups that include within sub groups (Figure 1):

Figure 4-1: The three sport venue finance analysis categories



The dashed lines in Figure 1 represent the relationship between studies that discuss public goods and municipal capitalism within a political analysis framework such as stakeholder analyses. In the discussion section I include a review of recent sport facility developments to portray some of the arguments made throughout the study and emphasize the importance of this data as public subsidies persist despite the criticism. Data was collected on all the existing facilities in the four major leagues, Major League Baseball (MLB), the National Football League (NFL), the National Basketball Association (NBA) and the National Hockey League (NHL). I then summarized the facility financing plans since 2010 using official public records. Finally, using some of the examples from recent projects, I portray the proposed analysis process distinguishing between public goods definitions and municipal capitalism.

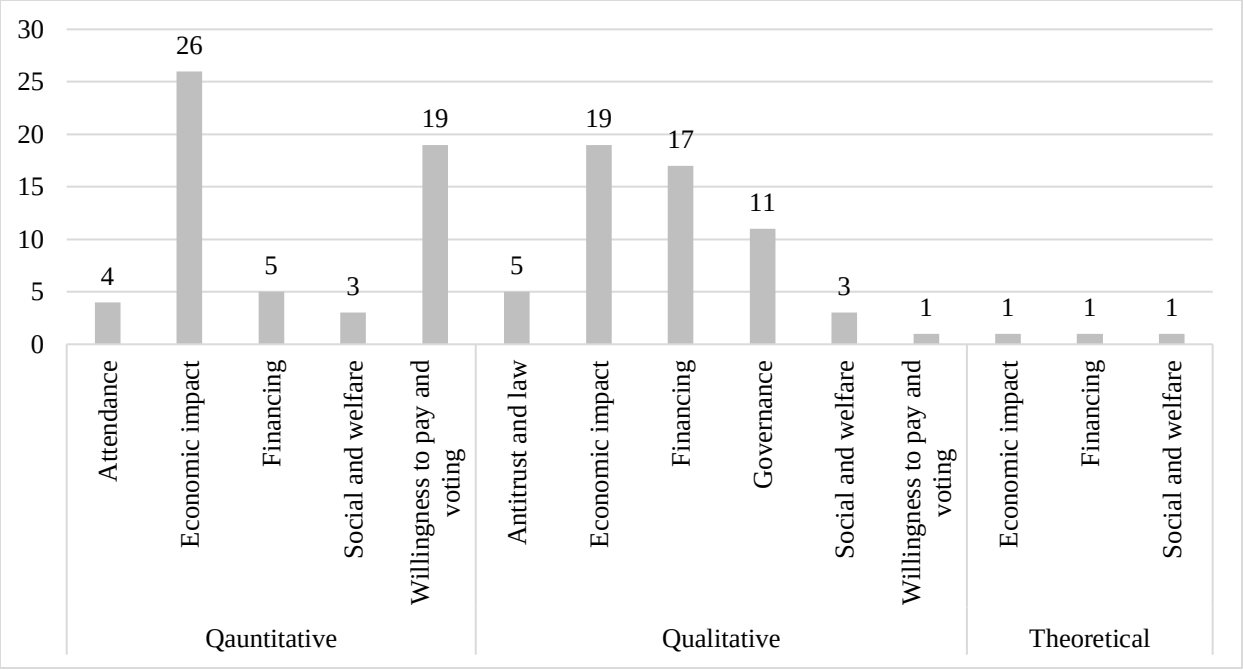
4.4 Sport Facility Finance Analyses

Each of the 116 studies analyzed the public finance predicament created from governments providing some or all of the funding for a venue used by professional teams (Noll, 1974). A detailed list of the papers appears in Appendix 1. These studies used different quantitative and qualitative research methods. Most of the studies concluded that there is no tangible economic impact justification for the public sector to finance the venues used by professional franchises (e.g. Baade, 1996; Crompton, 2006; Propheter, 2012). That is not to suggest there is no impact (Feng and Humphreys, 2018), but it remains to be determined if that impact, tangible or intangible, is sufficient to justify the commitment of tax money (Dolan, et al 2016). Cities that want to maintain "major league" status are occasionally faced with franchises threating to leave if they do not receive public incentives, but the proponents often use assessed economic impact benefits to justify the public costs. Maintaining their monopoly limiting the number of franchises, leagues and owners continue to demand public incentives (Rosentraub, 1997). The monopoly creates an under

provision and “market-failure” (Williamson, 1972) that empowers franchises bargaining for public incentives.

The most common quantitative empirical studies analyzed the extent of regional and local economic impacts including employment, income and population changes after facilities were built (Figure 2). The analyses primarily reveal that the impacts insufficiently compensate for the costs (Rosentraub, *et al.*, 1994). New facilities can relocate employment and development within the region (Rosentraub, 2006) but are unlikely to spur new growth and are often just substitutes (Baade, 1996). Other impact studies focused particularly on the real estate and development patterns ensuing sport facility development. These studies examine property values and actual development that occurred during and after cities financed sport facilities. Impact studies examine what took place after the facility opened. There were several studies that looked at the scale of new development and the resulting shift in taxes and other revenue streams that might benefit a host communities (Coates, 2007; Humphreys & Zhou, 2015). Several studies also empirically analyzed referendums and willingness to pay using different methodologies and theories including CVM analyses (i.e. Johnson *et al.* 2012). Those studies looking at decision processes noted that if a referendum or publicly elected body approved the financing of a venue then there was a tacit endorsement in the investment of tax dollars (Mason & Buist, 2013; Johnson & Hall, 2019). However as several studies revealed, referendums are often based on biased information relayed to the public and in some instances when the referendum failed to pass the public sector found alternative methods to publicly finance the facilities (Fort, 1997).

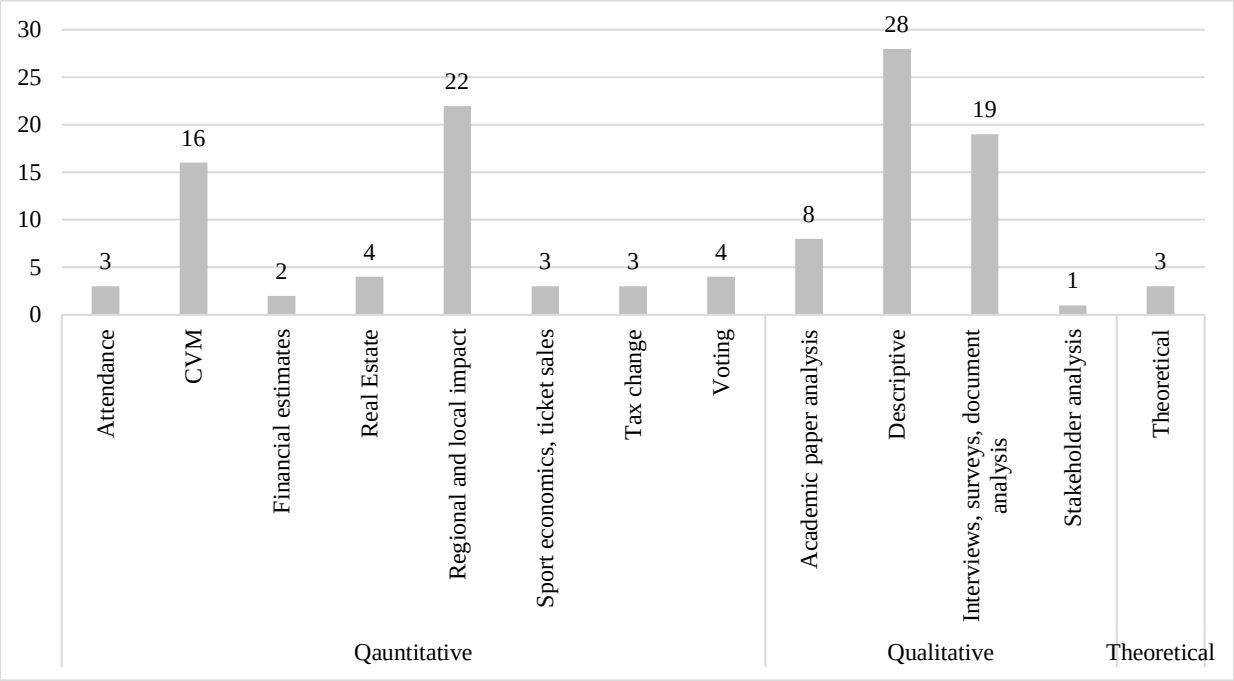
Figure 4-2: General topics based on type of analysis



The distribution between qualitative and quantitative empirical analyses is fairly even and the most studied topic is the economic impact of sport facilities (Figure 3). Quantitative analyses used different models and study units to examine the impact sport facilities had on local markets and regions, attendance and willingness to pay and voting. The majority of the quantitative research studied North American case studies but some analyses focused on European markets such as England and Germany and elsewhere. The attendance models primarily used ordinary least squared (OLS) and fixed effect demand models. Attendance analyses sought to examine the duration of the effect a new facility has on attendance. The purpose of these studies was to examine the argument that new facilities increase attendance and consequently economic activity around the facility (Baade, & Tiehen, 1990; Gitter & Rhoads, 2014). Quantitative economic impact analyses used hedonic models to examine real estate value increases related to the facility, OLS models examining income, multipliers, cost-benefit analyses, and actual construction (e.g. Hefner, 1990; Nelson, 2002; Hudson, 2003; Propheter, 2012 & 2017). Researchers quantitatively examining willingness-to-pay used CVM methodologies and surveys in order to examine the

amount people are willing to pay for a new facility and if those accumulated amounts compensate for the actual costs (Coates & Humphreys, 2003; Johnson, Mondello & Whitehead, 2007; Porter & Thomas, 2010). Other studies focused on referendums using polling station data (Johnson & Hall, 2019).

Figure 4-3: Methodologies and theories

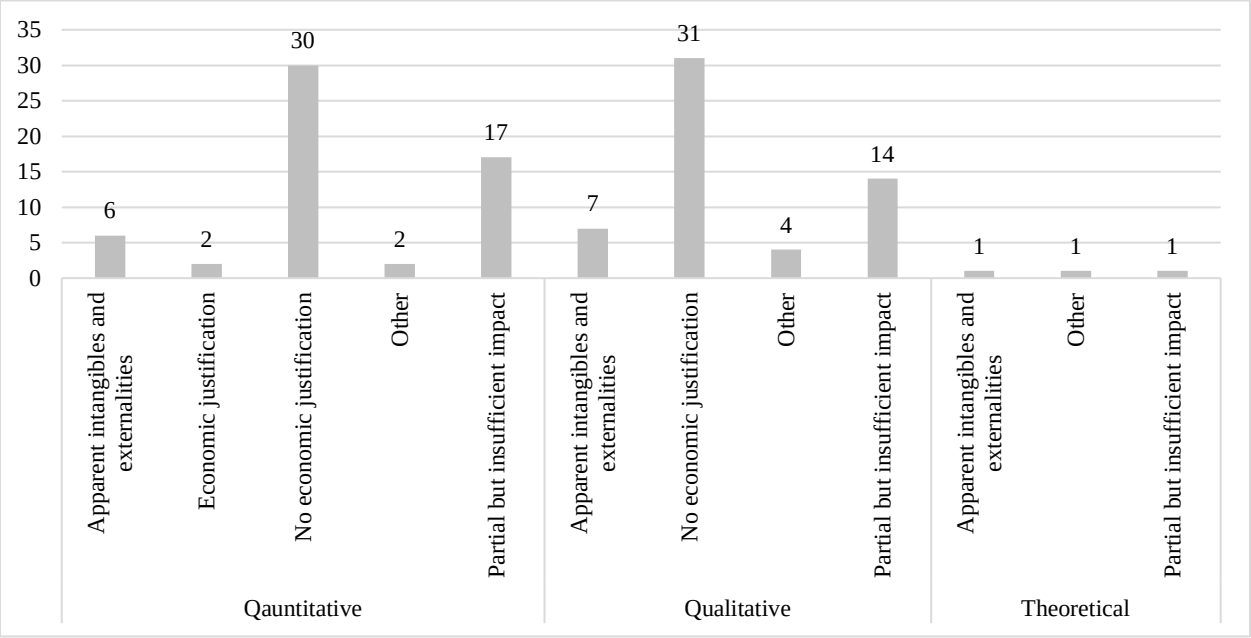


The qualitative studies often discuss economic impacts and financing mechanisms, but they also provide insights on governance and stakeholder analyses (Rosentraub & Swindell, 2002; Saito, 2018; Sant & Mason, 2019). These studies analyze the dynamics between different stakeholders and are particularly interested in the influential role of the private sector. Most commonly, the arguments draw attention to the private sector's ability to secure deals that directly favor the private sector and cannot guarantee tangible public benefits (Collins, 2008). Qualitative studies of stadium finance included interviews, document analyses and narratives, analysis of the laws and hearings, and descriptive statistics. The data collected in these studies strengthen the arguments appearing in the quantitative analyses but also provide other perspectives that were rarely included in the quantitative analyses, particularly, focusing on the role of the different

stakeholders in the process (Crompton, Howard & Var, 2003; Delaney & Eckstein, 2003; Collins & Grineski, 2007).

Figure 4 categorizes the conclusions from the 116 studies divided by the type of analysis described in the previous figures. Most studies concluded that there is no economic justification for the investment in sport facilities, and if there is an impact then it insufficiently compensates for the costs (Figure 4). There are a few studies that suggest that intangible benefits may compensate for the costs and argue that some projects may have meaningful societal or cultural benefits that could explain the costs but not necessarily justify them while leagues operate as they do (Rappaport & Wilkerson, 2001; Owen, 2006). The quantitative studies rely on the fact that there is no empirical evidence that sport facilities are associated with growth more so than other places may have experienced. They also emphasize the alternatives uses of funds used for the facilities. Conclusions also addressed that expenditure on sport by consumers may just substitute other activities rather than incur new expenses that would otherwise not be made. Conclusions in qualitative studies often point to the flaws in the system that allows the monopolized structures of the league. Other qualitative studies point to the governance dynamics that enable franchise owners to use the threat of relocation to obtain what the research argues, are unjustified expenses. A few studies argue that intangible benefits or externalities make a feasible argument to invest in sport facilities. The largest group are the studies that reject arguments that sport facility public finance is justified and creates benefits that compensate for the costs.

Figure 4-4: Conclusion categories



The focus of my study was the reference of public goods and urban entrepreneurialism in the sport literature. Of the 116 papers examined, 27 mention public goods in different contexts and different types of analyses. The primary difference is that some studies mention public goods in the background. In other studies, the public goods argument was part of a descriptive approach to examine public finance, but the majority of the studies focused on the production of public goods. Most studies examining the production of public goods used the CVM approach to analyze if the monetary impact of the public goods is greater than the investment. A broader discussion on

whether or not the public sector should even consider public expenditure is less apparent (Baade & Matheson, 2006).

4.5 Public goods, municipal capitalism and sport finance

I propose that a more adequate theory to examine public expenditure is the response of cities to the economic transition from manufacturing and the reliance on comparative advantages to a service-based economy capitalizing on competitive advantages. The focus for cities was on creating the environments that would attract and retain the human capital that helped service-related firms needed. This reality led to a focus for on entrepreneurial agendas. For example, with the younger entrepreneurs attracted to vibrant downtown areas with emerging residential and urban entertainment characters, cities increased public incentives and land allocations to the private sector (Leitner, & Garner, 1993). I address both theories in relation to sport development and finance. It is important to make the distinction between the venue itself and the franchises that play in the facility. The facilities require tickets to enter events and have limited capacity; hence, they are exclusionary and rival consumption is taking place. Additionally, the only reason there may be a market-failure is that the professional sport monopolies create it by limiting the number of franchises. In several studies, researchers assessed the notion that sport facilities or rather the franchises produce public goods such as civic pride (Groothuis, & Rotthoff, 2016). Civic pride is non-exclusionary and consumption is not rival but the private sector can produce those goods like other privately produced public goods (Bergstrom, Blume, & Varian, 1986). Either way, studies reached the conclusion that even the produced public goods do not financially justify the public expenditure. I will further address this matter in the conclusions, but I do not imply that public goods are irrelevant. I do propose that the focus in sport literature should perhaps address different

theories rather than public goods in an attempt to understand the reasons cities use public capital on privately used facilities despite the criticism.

4.5.1 Public goods and professional sport

> "In a private ownership economy, private goods are purchased by consumers in private markets; public goods are purchased in private markets and provided to the consumers by the special economic agent – the government. This agent has, therefore, two basic tasks to perform. First, it must choose the quantity of each of the K public goods it will purchase and provide the consumers. Second, it must raise, through taxes, the necessary funds to finance its purchases of the public goods. In order to carry out these tasks in a socially desirable or non-arbitrary manner, the government will have to communicate with the consumers." (Groves and Ledyard, 1977, P.786)

Several studies explicitly discuss sport finance and public goods or the production of public goods. The production of public goods in sport literature is an attempt to define the outcome of a commodity provided by the public associated with the development of a product that in itself is not a public good. The facility itself is either a pure private good or possibly a club good, the products it offer can be sustained through admissions (exclusion) and consumption is mostly rival (even if one argues that within the venue there is rival consumption). One might concede events are club goods (Buchanan 1965; Sandler & Tschirhart, 1997). While the facility is clearly not a public good, the franchises that play there can produce some externalities for which exclusion is not possible and in which there is non-rival consumption (Groothuis, Johnson, & Whitehead, 2004). Franchises of course require facilities to play. Using public goods theories to discuss stadium finance raises two issues. First, are the externalities enough to justify the public expenditure or an inappropriate use of public capital for a product that is arguably a private one?

Second, the externalities are not geographically limited while the public sources used to pay for the facilities (or rather, to maintain or attract a franchise) are constrained by governmental jurisdiction or taxable zones. Hence, it is impossible to prevent the "free-rider" problem and prevent people from enjoying the externalities without having to pay for the facility (Mules, 1998; Owen, 2003).

If people prefer not to pay for the facility or perceive there are no immediate benefits associated with local public goods (a sport facility that could be associated with the provision of some form of public services such as property increase) voters could vote against a referendum. Alternatively, voters could also potentially move to a different location if they prefer that the public sector where they live does not use their tax payments for financing a sport facility (Dehring, Depken II, & Ward, 2008). However, there is no research as of yet that examined if people actually left a city where taxation in some form was used to pay for a facility. It is hard to believe that the marginal increase in taxation would be enough to cause mass exodus, unless it was part of wider escalation in taxation or substantial change in the tax-service bundles and provision of local public goods (Tiebout, 1956; Dowding, John, & Biggs, 1994; Marsh & Kay, 2006). It is a hard case to make that the facility or franchise are a public good, and even the production of public goods can be provided by the private sector. It is also hard to imagine that franchises would not build facilities if governments refused to provide public incentives or directly pay for facilities, or if regulations would limit the possible uses of public resources and tax benefits on issued bonds. Currently, franchises use the relocation threat to secure public incentives and cities comply if they want to

avoid the possibility of losing a franchise or fail to attract one. Why do cities care so much about having a franchise, what do they hope to gain or avoid losing?

4.5.2 Municipal capitalism and entrepreneurialism, and professional sport

> "Put simply, the "managerial" approach so typical of the 1960s has steadily given way to initiatory and "entrepreneurial" forms of action in the 1970s and 1980s. In recent years in particular, there seems to be a general consensus emerging throughout the advanced capitalist world that positive benefits are to be had by cities taking an entrepreneurial stance to economic development. What is remarkable, is that this consensus seems to hold across national boundaries and even across political parties and ideologies." (Harvey, 1989, P.4)

The entrepreneurial city is a prescriptive theory of urban development and governance comprised of three defining features (Jessop and Sum, 2000):

1. Economically well-performing entrepreneurial cities that pursue innovative strategies to maintain or enhance competitiveness
2. Explicitly formulated reflexive strategies pursued in an active, entrepreneurial fashion. Cities can be said to act in a relatively unified and strategic manner and/or in which specific social forces are able to define the interests of the city and be seen to act for and on behalf of the latter.
3. Less successful cities that explicitly adopt and define themselves as entrepreneurial urban regimes

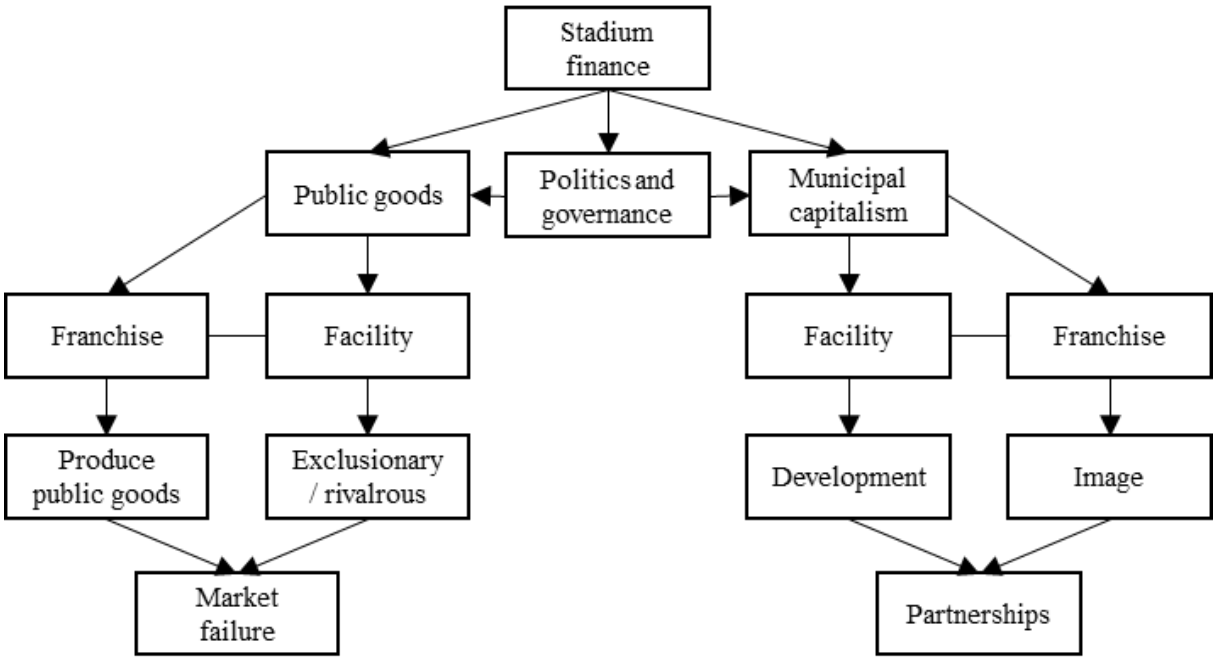
Chapin (2002) explicitly discussed municipal capitalism and San Diego's attempts to invigorate downtown development including a baseball ballpark, and suggested that future research should further examine sport and municipal capitalism. There does not appear to be another explicit study on sport and municipal capitalism and municipal entrepreneurialism in the literature. However, if

I review the three features of the entrepreneurial city then it appears that several sport development studies implicitly addressed them. It is difficult to pinpoint the exact measures that differentiate between entrepreneurial and non-entrepreneurial cities, other than noticing a clearer agenda to attract development using public incentives and cities adopting a business-like approach. If I go ahead with the somewhat quasi definition of municipal capitalism and entrepreneurialism that is relatable to sport development literature then I can identify some relationship between sport development and the entrepreneurial city. First, a number of the larger cities provided public incentives or were directly involved in financing facilities. It is generally impossible to tell if North American cities would provide these incentives if franchises could not threaten to leave or expect incentives if they were to relocate. There is evidence of cities outside of North America that also financed sport facilities used by professional franchises despite the somewhat more free market in different leagues (Jones, 2002). Hence, the public sector still occasionally invests in sports facilities. However, there is stronger evidence of teams that privately financed their facilities. Secondly, some cities that contributed to sport facilities outlined clear agendas and strategies they believed will achieve development and revenue generating goals. These goals either targeted development nearby the facility or hoped to attract new economic activity and consumers (Rosentraub, *et al.*, 1994; Siegfried & Zimbalist, 2006; Cantor & Rosentraub, 2012). Third, a number of cities that can be defined as fiscally weaker opted to provide some public incentives for sport facilities, hoping that keeping or attracting the franchise is one of the components to increase or at the least maintain some appeal to the city (Chapin, 2004; Rosentraub, 2009). Those cities on some occasions also hoped that building the facility in a certain location would stimulate growth

and development around the facility. The question however remains, did cities that appear to match one or more of the three features actually achieve what they set out to achieve?

Figure 5 depicts my findings on the relationship between public goods, municipal capitalism, and entrepreneurialism, and publicly financed facilities. First, I make a distinction between the two theories and then the two main components that differentiate between the facility and the franchise. I suggest municipal capitalism may be more adequate in light of local urban governance changes since the 1980s but public goods is still an important critique in light of the current monopolistic circumstances.

Figure 4-5: Public goods, municipal capitalism, and sport finance analysis flowchart



I believe it is difficult to make the argument that the neoclassical public goods theories considered sport facilities as worthy or examples of goods and services that should be paid for by the public sector. Public finance theorists were determining what justifies the use of fiscal resources for infrastructure projects, education, and other services necessary for residents. It is unlikely they were referring to building entertainment venues for the private sector. In fact, even the evolutionary theories such as club goods that discussed projects such as country clubs or local public goods still insufficiently describe the use of public finance for facilities. This would specifically cover the facility, but the facility and franchise are interrelated, therefore researchers sought to examine the production of public goods related to the franchise. However, when paying for the facility the city or state do not gain part ownership of the franchise, they merely "buy" the right to have the team remain in the city for a certain period. Therefore, the franchise that is a private good produces the public good and would provide the good with a privately financed

franchise similar to those produced by other privately owned and built sport facilities. In Figure 6, I point out that there is relevancy in public goods but from a more critical perspective that beckons the question if municipal capitalism and entrepreneurism should include investment in sport facilities.

4.6 Discussion: Recent sport facility development and categorization

In the past 20 years there were 68 franchises playing in new facilities (Table 2), including 16 Major League Baseball (MLB) franchises, 19 National Football League (NFL) and National Basketball Association (NBA) franchises, and 14 National Hockey League (NHL) franchises. Table 2 displays the age of facilities used in each of the leagues in 2018. A few franchises share facilities, particularly NBA and NHL ones. There are new facilities currently being built for NFL and NBA franchises, and the MLS that is not included in Table 2. With so many relatively new facilities, it is not surprising that the public finance debate persists, particularly because the unlikelihood that franchises will stop pursuing public incentives as they have done since 1950s. Public officials have attempted to deter public finance such as the Eliminating Federal Tax Subsidies for Stadiums Act (S.1342) HR 811, but have failed thus far.

Table 4-2: Stadium age in 2018 for each of the four leagues

Stadium age	MLB	NFL	NBA	NHL	Total
1—5	1	3	3	3	10
6—10	4	3	2	2	11
11—15	4	2	2	2	10
16—20	7	11	12	7	37
21—50	9	9	9	16	43
50+	5	4	2	1	12
Total	30	32	30	31	123

Table 3 outlines the eighteen facilities opened since 2010 for nineteen franchises. Public expenditure was close to six billion (2018) USD on the facilities themselves, not including other necessary investment and the land's value.

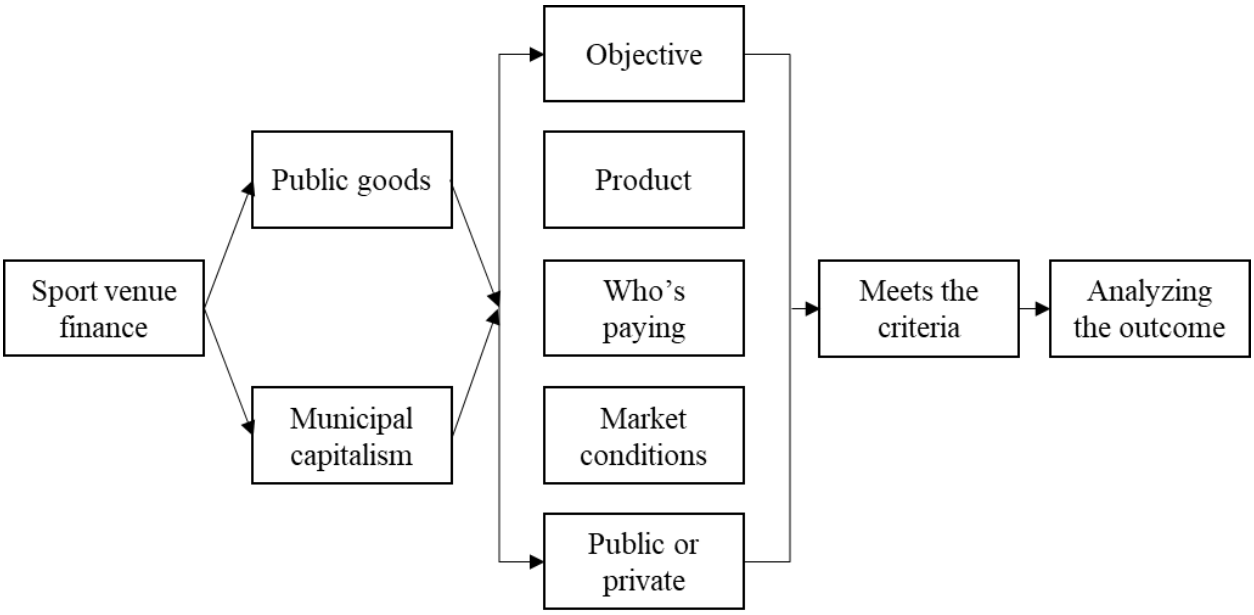
Table 4-3: Financing, ownership, operations and estimated cost of Major League facilities opened since 2010 (Notes: Appendix 2)

Team(s)	League	Current name	Capacity	Opened	Age of old facility/relocation/ expansion	Owner	Operator	Estimated cost ($ Millions when built)	Financing	Direct Public costs (Millions 2018 USD)	Notes (Appendix)
Atlanta Braves	MLB	SunTrust Park	41,084	2017	19	Public	Braves	688.4	Mixed	377	1
Atlanta Falcons	NFL	Mercedes-Benz Stadium	71,000	2017	24	Public	AMB (Falcons parent org)	1,536.64	Mixed	204.9	2
Brooklyn Nets	NBA	Barclays Center	17,732	2012	Relocated	Public	Brooklyn Nets (ArenaCo)	1,093.7	Mixed	284.7	3
Detroit Pistons	NBA	Little Caesars Arena	20,491	2017	28	Public	Olympia Entertainment	883.98	Mixed	332	4
Detroit Red Wings	NHL	Little Caesars arena	19,515	2017	37	Public	Olympia Entertainment	883.98	Mixed	332	4
Edmonton Oilers	NHL	Rogers place	18,347	2016	41	Public	Edmonton Oilers	381.88	Mixed	277.3	5
LA Rams / Chargers	NFL	Los Angeles Stadium at Hollywood Park	70,240	2019	Relocated	Private	Los Angeles Rams	3,000	Private	0	6
Las Vegas Raiders	NFL	Las Vegas stadium	65,000	2020	Relocated	Public	StadCo (Raiders)	1,439	Mixed	750	7
Miami Marlins	MLB	Marlins Park	36,742	2012	24	Public	Miami Marlins	742.07	Mixed	421.4	8
Milwaukee Bucks	NBA	Fiserv Forum	17,500	2018	29	Public	Milwaukee Bucks (ICON)	548.23	Mixed	261.6	9
Minnesota Twins	MLB	Target Field	38,544	2010	27	Public	Minnesota Twins	639.12	Mixed	403	10
Minnesota Vikings	NFL	US Bank stadium	66,655	2016	33	Public	Minnesota Vikings	1,234.79	Mixed	544.7	11
New York Giants/Jets	NFL	MetLife	82,500	2010	33	Private	New York Giants	1,842.51	Private	0	12
New York Islanders	NHL	Barclays Center	15,795	2012	41	Public	Brooklyn Nets (ArenaCo)	1,093.7	Mixed	284.7	13
Orlando Magic	NBA	Amway Center	18,846	2010	20	Public	Orlando Magic	552.75	Mixed	486.4	14
Pittsburgh Penguins	NHL	PPG Paints Arena	18,387	2010	49	Public	Pittsburgh Penguins	425.33	Mixed	351.2	15
Sacramento Kings	NBA	Golden 1 Center	17,583	2016	30	Public	Kings	584.02	Mixed	266.8	16
San Francisco 49ers	NFL	Levi's stadium	68,500	2014	42	Public	Santa Clara Stadium Authority	1,497.04	Mixed	511.8	17
Vegas Golden Knights	NHL	T-Mobile arena	17,368	2016	Expansion	Private	AEG	366.19	Private	0	18

Sources: Various sources were used including public records, links to the sources can be provided upon request

Moving forward, I propose that researchers studying sport venue finance should focus on more adequate theories to investigate whether or not the public sector can still generate some benefits for the public sector while the professional leagues continue to operate as cartels. I propose a framework and flowchart (Figure 6) that firstly distinguishes each of the two theories, public goods and municipal capitalism, using similar criteria but from different perspectives. The next step in the proposed flowchart is to examine if the components in the actual project meet the criteria outlined in the theories. Finally, based on the previous step, I propose examining the outcome and how it reflects each of the theories and their criteria.

Figure 4-6: Framework for Sport venue finance theoretical and project analysis



The following examples, based on projects listed in Table 3, outline the proposed process of examination. The three examples are Detroit's new arena, Las Vegas's new stadium, and the new stadium in Inglewood, California (Table 4). In all three cases the facility itself is exclusionary and rivalrous because of the limited capacity and requirement to purchase tickets. This therefore

requires us to address the notion that produced public goods may have some beneficial merit to parts of the public. Detroit involved the movement of a franchise within the city while Las Vegas and Los Angeles involved franchises relocating to new cities that did not have a franchise from the same league. Los Angeles previously had NFL franchises but were without one since 1994, whereas this is the first NFL franchise to play in Las Vegas, and in fact only the second professional major league franchise to play in Las Vegas following the expansion of the NHL to Las Vegas in 2017. These three examples are also very different from one another. Detroit and Las Vegas both included public finance while Inglewood's was ultimately privately financed. Detroit and Las Vegas had very different public financing resources to cover the public costs. Whereas they were both reliant on using publicly issued bonds, Detroit's taxation was based on State issued bonds and downtown development. Las Vegas opted to increase hotel room taxes and therefore outsource costs to visiting tourists.

Detroit's original agreement with the franchise owners included privately property development nearby the arena in what they dubbed The District Detroit that would increase the city's revenues and fund much needed redevelopment[12]. Since the arena's completion, very few projects have been developed and there is no apparent contract that includes any compensation of other parts of the plan are not implemented. In the case of Las Vegas, public officials are hoping that the facility will attract more tourism to sporting and entertainment events that would otherwise not come to Las Vegas. Increased tourism will compensate for the public costs and "pay for itself" which will at the least resolve that part of the debate. It will not resolve the argument that increased hotel taxation could also be used for other public projects that are more likely local public goods

[12] "The new 20,000 seat arena is the centerpiece of a 50-block area of the city dubbed The District Detroit that will include development of office space, retail, housing and hotels (http://www.degc.org/little-caesars-arena-model-collaboration/)

such as education. Inglewood is very different, and the incentives were the right to have access to the Metropolitan Los Angeles market. But, the owner of one of the franchises that relocated to Inglewood also sought the possibility to build a state-of-art stadium and invest in mixed-use development nearby the stadium. Hence, in addition to the increased anticipated revenues from playing in Metropolitan Los Angeles, the owner is investing in real estate and reached an agreement to rent the facility to the other franchise that relocated to Metropolitan Los Angeles, automatically doubling the number of large sporting events during the NFLs regular season. The stadiums in Las Vegas and Inglewood are still under construction. Table 4 summarizes the three projects, examining the criteria described in Figure 6.

Table 4-4: Summary of the three examples

	Detroit (Little Caesars Arena)	Las Vegas (Allegiant Stadium)	Los Angeles (SoFi Stadium)
Primary objective	A new arena in the Midtown area of Detroit and potential adjacent property development	A new NFL stadium built for a relocated franchise	New NFL stadium for relocated franchises and adjacent mixed-use property development
Product	Sport facility for preexisting franchise and nearby development	Sport facility for a new franchise in the city	Sport facility for relocated franchises and nearby development
Who's paying (public costs and "free riders")	State and city used tax-exempt bonds to finance (Approximately 58% of the total cost). State funding relays some of the costs on to non-city sources.	The public finance (Approximately 40% of the entire costs) relies on hotel room tax revenue and proceeds of bonds issued by Clark County.	Privately financed facility but some tax-breaks are provided if revenues exceed a certain amount.
Market conditions	City recently filed for bankruptcy.	Until recently had no franchise in a market dominated by tourism.	City with no NFL franchise for several years despite the market's size.
Public or private	City-owned but operated by private company	City-owned but operated by private company	Privately owned and operated
Public goods	The presence of a franchise may produce public goods but the facility itself is designed as a private product that is more likely the public provision of a private good and "market-failure" is a result of the monopoly rather than the unlikelihood that the private sector will provide the product.	The presence of a franchise may produce public goods but the facility itself is designed as a private product that is more likely the public provision of a private good and "market-failure" is a result of the monopoly rather than the unlikelihood that the private sector will provide the product.	This is a pure private good that is in fact producing the implied public goods such as pride and can therefore also be perceived as private provision of public goods.
Municipal capitalism	While the agreement relied on private property investments nearby the facility, they have been shortcoming raising questions as to the validity of the deal that potentially could be perceived as a relatively successful project given that cities continue to finance sport facilities	A non-resident based cost burden (albeit that could be used for other projects) for a project hoped to attract more tourism and increase the city's amenities that are not inherently based on gambling tourism. Success of this project depends on several factors that can only be estimated after the facility is completed.	As a privately built facility, the city gained from rising property values and taxes without allocating costs, however, the city agreed to provide some tax breaks in order to assure the deal went through and these breaks are designed to cover the infrastructure costs.

These three cases represent three distinct types of approaches to municipal capitalism that I believe emphasize the critical approach I discuss in this study. In Las Vegas, the use of an

exported tax that diverts benefits to non-payers contradicts principles of public finance that are closely tied to public goods ideas. As a result there is no value in using public goods theory to assess the venue. Nevada made an investment in an effort to secure benefits (image) and possible new tax revenue growth for Clark County. From a municipal capitalism approach, the state legislature and representatives from Clark County wanted a strategic investment that fits with a municipal capitalism perspective. The return on the investment of dollars was an attempt to lure more events to Las Vegas while relaying the cost of the asset to tourists. Unless the additional taxes deter tourists which is unlikely or if tourists spend less money on other activities, the public sector has not risked its own capital. Nevada has ignored the benefit principle but in that sense is using "other people's money" to secure tangible and intangible benefits for residents. The success of this agenda still depends on whether or not the events in the new stadium increase the number of tourists and generate new revenues. If that were to occur the public sector would have subsidized a facility without any return. (The hotel tax could not be used for any other asset other than those that enhance the hospitality sector).

Detroit's case is also better assessed from a municipal capitalism perspective. Detroit wanted to create an entertainment district that included all assets in a narrowly defined space. In exchange for a detailed development strategy led by Olympia Development the state and city agreed to commit TIF revenues to the building of a new venue for the Detroit Red Wings. The formal contract only called for $200 million in new real estate development, but the District Detroit plan which was extensively publicized described a far larger private sector commitment to redevelop the area in and around the entertainment district. The arena has been open for three years, and very little of the promised development has taken place even though the terms of the contract between Olympia Development and the public sector have been fulfilled. Simply put, the

project's larger objectives have not been met and the contract between the city and the owner failed to guarantee much of the development detailed development. There was never an intent to declare the venue a public good; the public sector made an investment in a plan, District Detroit, but lacks the legal recourse to secure its anticipated return.

The Inglewood project is possibly the best example of a successful municipal capitalism venture, the collaboration between the public and private sector resulted in a privately financed project that includes substantial development. The owner of the St. Louis Rams wanted to relocate to the Los Angeles area. To that end, a partnership was formed that purchased a horse racing track and surrounding land in Inglewood, California. With all of the risk for the investment assumed by the private sector, the public sector's liability is for a tax abatement if development exceeds an agreed to level. That contract assured the public sector that for permitting the stadium to be built, new tax revenues will be secured. As a result, the venue was not considered a public good and the dimensions of the contract make it clear that the venue is a private good. The private sector assumes the majority of the risks. The only potential loss for the city is from other developments that could have otherwise been built on the large parcel land that was bought by the team's owner[13].

4.7 Conclusions: Where to next

During the extensive stadium finance research in the 1990s and early 2000s, researchers appeared to reach a consensus that the North American professional sport leagues curtailed competition and used these circumstances to leverage public incentives and finance for new sport venues. However, public officials continue to provide incentives despite the monopolized structure of the leagues in

[13] "This is a really good deal [from a public-policy standpoint] compared to virtually any football stadium that has been built in the last 30 years," Noll said, adding a caveat about potential lost revenue from developments that might otherwise have been constructed on the 298-acre site. ("The Rams' $5 billion stadium complex is bigger than Disneyland. It might be perfect for L.A." Washington Post, January 26th, 2019)

their pursuit of attracting or maintaining a major league franchise. There appear to be two leading arguments for such investments:

1. The economic impact arguments often made by stadium finance proponents that economic impact studies identified that, bar a few exceptions, actual development and economic development is inconsistent with the initial arguments.
2. Perceived cultural amenities such as civic price and identity that supposedly appeal to new and existing citizens. Public incentives and costs are a necessary means to guarantee the presence of a franchise that provides these social amenities.

The intangible social benefits are hard to quantify and there is no evidence yet to support arguments that enough people moved to or left a location because of the presence or lack thereof of a sport franchise that justifies public finance. Nor is there evidence that people left a city that publicly supported the incentives or costs for a facility to suggest that publicly financed facilities negatively affected the local economy. Academics have examined some neoclassical public finance theories in relation to sport facilities, particularly referring to public goods. The majority of these studies examined the produced public goods and social amenities such as civic pride that are generally un-contested and un-restrictive. However, while some produced goods may be public ones, the sport facilities are in essence private goods and so are the franchises that play in them. Additionally, in cases where the private sector privately builds the facilities then the social amenities will become privately provisioned public goods and in fact do not require public investment. These arguments are well known but the public sector continues to contribute public capital and space to privately owned sport franchises.

I argue that public goods provide some necessary feedback but fail to address the actual reasons why cities have not collectively refused to provide incentives as long as the monopolies

persist. It is more likely that the costs to maintain or attract a franchise stem from entrepreneurial or personal agendas rather than the provision of (local) public goods. Therefore, I propose that future analysis of stadium finance should focus on municipal capitalism and urban entrepreneurialism rather than examine these projects from a neoclassical public finance theoretical approach. Albeit, the neoclassical studies are an important criticism of the potential misuse of public resources that could otherwise serve a larger portion of the population or provide necessary services that are more likely local public goods. However, municipal capitalism and urban entrepreneurialism theorists indicated that during the 1980s and 1990s many cities expanded their role from resource providers to business and development entrepreneurs competing for human capital. Sport franchises and their costly facilities may just be a part of this agenda in some cases. The sport cartels undoubtedly affect the decision-making process but cities do not have to pay if they are willing to lose a franchise or "call the bluff". This raises a number of questions and ultimately what I argue academics should further examine in the literature:

1. Would there be some justification in financing or providing incentives for sport facilities if the public consented in a democratic process if there were no monopoly?
2. Would the response be different if public officials ceased to make claims that the facility will have explicit economic benefits that justify costs and just focus on the proposed intangible benefits such as civic pride?

Ultimately, considering that cities invest in different amenities and compete over human capital

3. Is sport a perceived amenity that contributes to a city's identity and part of a larger social "package" appealing to human capital and investors?

4. Do the monopolies force cities to contribute resources that cities would not provide if the monopolies did not exist or do the monopolies ultimately distort the scale of the costs of having a franchise?
5. Is the ultimate question then; how much should the public pay for this product if the monopoly did not exist? Is there a justified cost and how should it be assessed?

It is possible that these expenses and public incentives are not justified under any circumstances, but these dilemmas are not limited to the sport industry. Since the late 1980s, academics debated the justifications for public expenses that extend beyond the neoclassical public goods and public finance theories. Municipal capitalism and urban entrepreneurialism may provide a better explanation why cities engage in these activities but they do not necessarily justify the investments. By examining these theoretical perspectives, academics can provide a more lucid explanation as to why public officials engage in these activities, provide new critiques examining the outcomes, and assess when and how much costs are justified.

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4.9 Appendix

Table 4-5: Appendix 1: List of studies included in the analysis and cited in the reference list

Author (s)	Year	General topic	Analysis	Analysis type	Study unit
Ahlfeldt, & Maennig,	2010	Economic impact	Real Estate	Quantitative	Europe
Ahlfeldt, & Maennig,	2012	Willingness to pay and voting	Voting	Quantitative	Europe
Ahlfeldt, & Maennig	2010	Social and welfare	Regional and local impact	Quantitative	Europe
Austrian, & Rosentraub	2002	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Baade	2003	Economic impact	Descriptive	Qualitative	North America
Baade.	1996	Economic impact	Regional and local impact	Quantitative	North America
Baade & Dye	1988	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Baade & Dye.	1990	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Baade & Dye F.	1988	Financing	Descriptive	Qualitative	North America
Baade, & Matheson	2006	Financing	Descriptive	Qualitative	North America
Baade, & Matheson	2001	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Baade, & Tiehen	1990	Attendace	Attendance	Quantitative	North America
Baade, Baumann, & Matheson	2011	Economic impact	Tax change	Quantitative	North America - Case Studies
Baade, Baumann, & Matheson	2008	Economic impact	Regional and local impact	Quantitative	North America
Baade, Baumann, & Matheson	2008	Economic impact	Tax change	Quantitative	North America - Case Studies
Bale	1990	Social and welfare	Interviews, surveys, document analysis	Qualitative	Europe
Buist, & Mason,	2010	Financing	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Carlino, & Coulson	2004	Social and welfare	Regional and local impact	Quantitative	North America
Chanayil	2002	Economic impact	Descriptive		North America - Case Studies
Chapin	2004	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Coates	2007	Economic impact	Interviews, surveys, document analysis	Qualitative	North America
Coates & Humphreys	2003	Willingness to pay and voting	Voting	Quantitative	North America - Case Studies
Coates & Humphreys	2008	Economic impact	Academic paper analysis	Qualitative	North America
Coates & Humphreys	2000	Financing	Academic paper analysis	Qualitative	Theoretical
Coates & Humphreys	2003	Financing	Descriptive	Qualitative	North America
Coates & Humphreys	2002	Economic impact	Regional and local impact	Quantitative	
Coates & Humphreys	2006	Willingness to pay and voting	Voting	Quantitative	North America - Case Studies
Coates & Humphreys	2005	Attendance	Attendance	Quantitative	North America
Coates, Humphreys, & Zimbalist	2006	Economic impact	Regional and local impact	Quantitative	North America
Collins	2008	Governance	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Collins, & Grineski.	2007	Economic impact	Descriptive	Qualitative	North America - Case Studies
Crompton	2004	Financing	Academic paper analysis	Qualitative	Theoretical
Crompton.	2006	Economic impact	Academic paper analysis	Qualitative	North America

Author (s)	Year	General topic	Analysis	Analysis type	Study unit
Crompton	1995	Economic impact	Interviews, surveys, document analysis	Qualitative	North America
Crompton, Howard, & Var	2003	Governance	Descriptive	Qualitative	North America
Dehring, Depken II, & Ward	2008	Willingness to pay and voting	Voting	Quantitative	North America - Case Studies
Dehring,, Depken, & Ward	2007	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Delaney, & Eckstein	2007	Governance	Descriptive	Qualitative	North America - Case Studies
Delaney, & Eckstein	2003	Governance	Descriptive	Qualitative	North America - Case Studies
Dietl, Lang,& Nesseler	2017	Financing	Theoretical	Theoretical	Theoretical
Erickson	2001	Antitrust and law	Descriptive	Qualitative	North America
Feng, & Humphreys	2018	Economic impact	Real Estate	Quantitative	North America - Case Studies
Fort	2004	Financing	Sport economics, ticket sales	Quantitative	North America
Fort	1998	Willingness to pay and voting	CVM	Quantitative	North America
Fox	2005	Financing	Descriptive	Qualitative	North America - Case Studies
Friedman, & Mason	2004	Governance	Academic paper analysis	Qualitative	North America
Friedman, & Mason	2005	Governance	Stakeholder analysis	Qualitative	North America - Case Studies
Gitter, & Rhoads	2014	Attendace	Attendance	Quantitative	North America
Grant Long,	2005	Financing	Financial estimates	Quantitative	North America
Gratton, Shibli, & Coleman	2005	Economic impact	Interviews, surveys, document analysis	Qualitative	Europe
Groothuis, & Rotthoff	2016	Social and welfare	Interviews, surveys, document analysis	Qualitative	North America
Groothuis, Johnson, & Whitehead	2004	Social and welfare	CVM	Quantitative	North America - Case Studies
Hefner	1990	Economic impact	Financial estimates	Quantitative	North America
Horn, Cantor, & Fort	2015	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Hudson	2003	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Humphreys & Zhou.	2015	Economic impact	Theoretical	Theoretical	North America
Hutchinson, Berg, & Kellison	2018	Governance	Descriptive	Qualitative	North America - Case Studies
Irani	1997	Attendance	Regional and local impact	Quantitative	North America
Jensen.	1999	Antitrust and law	Interviews, surveys, document analysis	Qualitative	North America
Johnson, Groothuis, & Whitehead	2001	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Johnson, Mondello, & Whitehead	2007	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Johnson, Whitehead, Mason, & Walker	2012	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Johnson & Hall.	2019	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Jones	2002	Financing			Europe
Jones	2002	Economic impact	Descriptive	Qualitative	Europe

Author (s)	Year	General topic	Analysis	Analysis type	Study unit
Kalich	1998	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Kellison, & Mondello.	2014	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Kellison, Newman, & Bunds	2017	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Kennedy & Rosentraub	2000	Financing	Descriptive	Qualitative	North America - Case Studies
Lee	2002	Economic impact	Descriptive	Qualitative	North America - Case Studies
Lertwachara & Cochran	2007	Economic impact	Regional and local impact	Quantitative	North America
Lipsitz	1984	Financing	Descriptive	Qualitative	North America - Case Studies
Mahony, & Howard	2001	Financing	Sport economics, ticket sales	Quantitative	North America
Mason, & Buist	2013	Governance	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Mason, Buist, Edwards, & Duquette.	2007	Financing		Qualitative	North America - Case Studies
Mason, Sant, & Misener	2018	Economic impact	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Matheson, & Humphreys	2009	Antitrust and law	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Miller	2002	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Mills, Rosentraub, Winfree, & Cantor.	2014	Financing	Tax change	Quantitative	North America - Case Studies
Mules	1998	Financing	Descriptive	Qualitative	Other
Nelson.	2002	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Nelson.	2001	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Owen	2006	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Owen	2003	Social and welfare	Theoretical	Theoretical	Theoretical
Phelps	2003	Financing	Interviews, surveys, document analysis	Qualitative	North America
Poitras, & Hadley	2006	Financing	Sport economics, ticket sales	Quantitative	North America
Porter, & Thomas	2010	Willingness to pay and voting	CVM	Quantitative	North America
Preuss	2004	Economic impact	Regional and local impact	Quantitative	Europe
Propheter	2017	Economic impact	Real Estate	Quantitative	North America
Propheter	2012	Economic impact	Regional and local impact	Quantitative	North America
Rappaport, & Wilkerson	2001	Social and welfare	Descriptive	Qualitative	North America
Rosentraub	2006	Economic impact	Descriptive	Qualitative	North America - Case Studies
Rosentraub	1999	Antitrust and law	Descriptive	Qualitative	North America
Rosentraub, & Swindell	2002	Governance	Descriptive	Qualitative	North America
Rosentraub, & Swindell	1991	Economic impact	Descriptive	Qualitative	North America - Case Studies
Rosentraub., Swindell, Przybylski, & Mullins	1994	Economic impact	Descriptive	Qualitative	North America - Case Studies
Ross	2003	Antitrust and law	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Saito	2018	Governance	Interviews, surveys, document analysis	Qualitative	North America - Case Studies

Author (s)	Year	General topic	Analysis	Analysis type	Study unit
Sam, & Scherer	2008	Financing	Interviews, surveys, document analysis	Qualitative	Other
Sant, & Mason	2019	Financing	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Santo	2005	Economic impact	Regional and local impact	Quantitative	North America - Case Studies
Santo	2007	Willingness to pay and voting	CVM	Quantitative	North America - Case Studies
Scherer, & Sam	2008	Governance	Interviews, surveys, document analysis	Qualitative	Other
Schwester	2007	Willingness to pay and voting	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Searle	2002	Financing	Descriptive	Qualitative	Mega events
Siegfried, & Zimbalist	2000	Economic impact	Academic paper analysis	Qualitative	North America
Siegfried, & Zimbalist	2006	Economic impact	Academic paper analysis	Qualitative	North America
Siegfried, & Zimbalist	2002	Economic impact	Regional and local impact	Quantitative	North America
Swindell, & Rosentraub,	1998	Economic impact	Interviews, surveys, document analysis	Qualitative	North America - Case Studies
Tu,	2005	Economic impact	Real Estate	Quantitative	North America - Case Studies
Walker, & Mondello	2007	Willingness to pay and voting	CVM	Quantitative	North America
Wilson, & Pomfret	2009	Financing	Descriptive	Qualitative	Other
Zimbalist, & Noll	1997	Economic impact	Academic paper analysis	Qualitative	North America
Spilling	1998	Economic impact	Descriptive	Qualitative	Mega events
Walton, Longo, & Dawson	2008	Willingness to pay and voting	CVM	Quantitative	Europe
Castellanos, García, & Sánchez	2011	Willingness to pay and voting	CVM	Quantitative	Europe

Table 4-6: Appendix 2: Notes and links for Table 4.

	Notes
1	Moved from Atlanta to nearby Cobb county following a financing agreement with substantial public financing
2	Substantial private investment but also includes accruing hotel tax for future development (estimated at 700,000,000 total)
3	Public financing included direct contributions and used eminent domain for use of the property that included planned development around the arena
4	$324,100,000 for the facility itself (the arena cost 862,900,000 + 259,000,000 for other development) the city also provided $34,000,000 for a practice facility for the Pistons for relocation purposes. Ice Hockey reduced capacity in the front rows.
5	The city directly financed part of the arena and development nearby, as stated no taxes were raised but ticket surcharges were implemented
6	Financing the facility was a private venture but the city included a sales tax break to "compensate" for infrastructure development. The stadium is owned by the LA Rams
7	Public finances are based on increased hotel taxes, final cost of the facility is not yet determined
8	Substantial public financing and additional expenses on parking lots nearby, the financing mechanism has been heavily scrutinized and was also subject to a law suit against the team
9	The State (through WCD) provided at least $203,000,000 (bond sales) and the city was required to include investment in parking structures
10	Funds are generated through a 0.15% sales tax, of the $350,000,000 $260,000,000 were the ballpark itself
11	Public finance through charitable gambling (State)
12	The building was erected on state-owned land at the 750-acre New Jersey sports complex, and the Jets and the Giants got 20 acres each for training facilities, as well as the right to develop 75 acres. Stadium is owned by NY Giants
13	New York Islanders moved to Brooklyn following a failed referendum to publicly finance a new facility
14	Public finance based on hotel taxes and sale and development of old arena
15	Direct cost through revenue bond issuing backed from various sources including casinos, the team in addition to minimal financial contribution received operational and revenues rights on nearby parking garage
16	Public finance using taxable lease-revenue bonds, “The repayment sources include ESC lease payments, parking net revenue, hotel taxes, and revenues generated by the development of the ESC". The deal also gave the city the right to host several events at the arena each year.
17	The public costs are loans rather than direct costs, but the loans are returned through naming rights agreements and other revenues sources
18	Arena was privately financed

Chapter 5. Conclusions

5.1 General conclusions

The primary purpose of this dissertation is to study the economics of stadium investment and development, and broaden the current literature. Each of my three studies provide new insights related to existing literature, confirm previously proposed arguments, and propose new methods to examine the finances of professional sport venues. Based on the quantitative and qualitative analyses in my research, I conclude and corroborate the evidence that the monopolistic structure of North American professional sport significantly affects where franchises are located and creates the market-failure that empowers the private sector pursuing public incentives. It is apparent that markets that appeared to be economically and demographically robust enough to have franchises did not have franchises playing in them. Leagues explicitly prevent franchise owners from relocating independently to different markets. Such markets without franchises can, and have been used as leverage by franchise owners to obtain public incentives. Because of the monopolies, it also appears that the long-term effect of new facilities on attendance and economic activity is also shorter compared to English soccer, that includes promotion and relegation. The duration of the association between the new stadiums and attendance was significantly longer in English soccer than the "honeymoon" in North American sports. As I revealed in the third study in the dissertation, despite the criticism against the allocation of public resources and incentives, since 2010 the public sector provided over five billion USD to support the development of professional sport venues. Public incentives and finance is unlikely to change, therefore I propose that the analysis of sport

related projects should focus on more recent urban development and governance theories as opposed to neoclassical public finance ones.

Mounting pressure on local governments to provide services and invest in infrastructure weighs on many cities struggling with growing population and demand for local amenities (Reese & Li, 2019). In some instances, cities such as Detroit were heavily affected by global shifts during the postindustrial era and more recently by the 2008 financial crisis. Some of those cities are struggling to rejuvenate their local economy and lack the resources to invest in necessary infrastructure (Kasdan, 2015). The increasing fiscal stress on local authorities requires adequate responses by public officials and decision-making concerning the proper use of public resources and local investments in development projects (Elling, Krawczyk & Carr, 2014). According to several studies, investment in professional sport facilities is not a justifiable investment and in fact, continuously strains local governments several years after the facilities are built (Grant-Long, 2013). There is some merit to these investments when the right circumstances and public-private agreements exist that could shift economic activity in conjunction with redevelopment initiatives (Rosentraub, 2014). In cases where the public and private sector failed to utilize initial agreements the investments essentially become subsidies and public provisions of private goods. This unfortunately appears to be the case for several cities. Such cities provided public resources for private facilities without a sufficient tangible return on their investment. The theoretical backgrounds and contributions of my three studies include an economic geography perspective, an analysis of attendance economics and new sport venues, and an elaborate discussion on public finance and policy. I address each of these separately in the following section.

5.2 Specific conclusions

North American professional leagues have a stronghold on the sport industry, and their monopolistic status limits the number of franchises. The monopolies enable franchises to use relocation threats in their pursuit to capture public incentives for new sport venues. Potential alternative markets must exist to make relocation a credible threat. Previous studies examined this in various ways and proposed that potential markets without franchises exist. My spatial analysis of Metropolitan Statistical Areas and counties in the United States, covering five census periods (1970-2010), proves that this was a systemic longitudinal process. The NFL for instance explicitly state that franchise owners are not free to relocate their franchises, while franchise owners in other leagues were also explicitly prevented from relocating to new markets. There are two implications to the current circumstances that suggest that the geography of North American professional sport would look very different if it the leagues were monopolized. Firstly, dismantling the monopolies will weaken the leagues' and franchises power dynamics when bargaining for public incentives. Secondly, it is possible that franchises would leave certain markets that suffered from economic decline since the 1950s, particularly affecting the presence of professional sport in Midwest cities that have strong social ties with their markets. There may however be some social merits in a system that prevents all the franchises concentrating in the largest markets. However, the public sector has been paying a substantial amount of capital to sustain this. Furthermore, there is likely an agenda within the leagues to maintain the current geographical distribution. The shared-revenue systems that lessen the dependency franchises have on local markets arguably reflects these interests to maintain a certain status quo and presence in certain parts of North America.

It does appear though that the monopolistic structure has another substantial impact on professional sport and new sport venues. Proponents pursuing public incentives or positive voting

outcomes have long argued that new facilities induce economic activity. Among these arguments for public incentives are the claims that increased attendance in new venues induces pedestrian activity around the facility. Since public officials spread financing and public incentives over several years, the relationship between the facility and increased attendance should also be a long-term one to justify such claims. Several studies in North America refute this claim, as they identify a limited duration where the association between the new facility and increased attendance is statistically significant, primarily less than ten years. This however is not the case in English soccer. In English soccer, the association between increased attendance and new sport venues is more prevalent. Extending well over ten years, the "honeymoon" is far longer in English soccer. There are several differences between the North American and European leagues, but among the greatest differences is the closed structure of North American leagues and the promotion-relegation system in Europe. I do not determine that the cause for this is the fact that English soccer has promotion and relegation, but it does indicate there is a difference in the outcome that the different league structure can potentially explain. This merely indicates another possible effect of the North American professional sport monopolies have on stadium finance. The possible association between the monopoly and "honeymoon" effect arguably hinders the argument that increased economic activity associated with larger attendance compensates for the costs. I discuss the likelier assurance of a positive effect in my third study.

The responsibilities of public officials evolved since the latter parts of the 20th century to include agendas pursuing prosperity and innovation to cities in addition to allocating fundamental public resources. Increasing competition for human capital often requires public officials to adopt entrepreneurial agendas and governance. Generally, this is not a novel concept that public officials have other agendas other than providing services. Local governments have long sought to attract

revenue-yielding investments. However, their role would focus on regulatory processes in conjunction with private investment. Since the 1980s, the entrepreneurial public sector transpired, actively pursuing development through public-private partnerships, and public investment in private sector like projects. I believe that these changes reflect the need to study stadium finance from an urban entrepreneurial perspective rather than neoclassical economic ones.

Examining stadium finance from a different perspective is not an attempt to justify the use of public resources for privately operated sport venues, but rather suggests a means to understand why despite all the criticism and existing analyses, cities continue to provide incentives and resources for these venues. There are still political and personal agendas but it is more likely that decision-makers have an entrepreneurial agenda as opposed to a public goods one. Previous studies examined the expenditure with neoclassical perspectives, but as Baade and Matheson (2006) suggest, sport venue related projects require a broader public finance perspective.

One of these perspectives in urban studies implies that decision-makers no longer address public investment in the same manner that neoclassical theories such as public goods do. Public sector decision-making is more similar to the private sector and public officials operate with business-mind agendas and strategic management. The agendas focus on encouraging private investment but also include public investment in urban projects. Sport venues, and more accurately the franchises playing in them, are an amenity that appeals to some people, and given the right conditions, sport venues could shift economic activity within the city to strategic locations and potentially encourage private investment. Unfortunately, that is not often the case. Negotiation processes often fail to guarantee private investment or compensation in cases of inadequate private investment. Public officials occasionally face the prospect of losing a franchise and the perception that losing a franchise can harm them politically. Therefore, public officials are inclined to

facilitate the franchise's demands. Either way, it is unlikely that public officials provide these incentives and resources on the basis that they are public goods or even club goods. It is more likely a public provision of a private good, and as long as franchises can relocate without replacement, public officials and the general population are often confronted with the difficult decision of allocation public resources or potentially losing the franchise. Bar, any policy or law changes, or collusion among local public sectors to cease any public resources devoted to sport venues, it is merely the case of making the most of the situation and create public benefits that could compensate for the expenditure. For policy makers, this would include requiring the private sector to compensate for goals that the private sector failed to meet, but that again is unlikely, given the monopolized structure of North American sport.

5.3 Future research

The three studies provide a basis for several new studies in sport and sport venue economics and public policy. The assumption that some markets exist without franchises despite their characteristics similar to those with franchises should be further established by examining the optimal geographical allocation of sport franchises given the current conditions. Another follow-up study though should also examine the optimal number of franchises and their location if the monopolies did not exist. Additionally, a longitudinal analysis of a shorter period but continuous timeline could provide further evidence of the impact of the monopolies on the spatial distribution of franchises given other data that is not consistently available or reliable in the census data. Such studies can provide further evidence on the impact of variables such as firms and other economic characteristics on the location of sport franchises. Establishing the hypothesis that league structure impacts the duration of the statistical association between new venues and attendance should be further examined in other leagues with promotion and relegation. A mixed-methods study can also

elaborate on the impact and incentives to build new privately financed sport venues in leagues with promotion and relegation as opposed to the North American models. Based on the final study, I propose four seemingly important studies that have not received enough attention. Firstly, I propose that a study is required that elaborates on the conditions that led to the allocation of public incentives and finance. This includes examining whether or not there were relocation threats and who initiated the project? Secondly, future studies should focus on the urban planning perspective, particularly performance and conformance, and the implementation of urban plans that included large sport venues. Thirdly, additional statistical analysis of the local distribution of economic activity and policy agendas can elaborate on the extent cities can "make the most" of the situation and use sport as a platform to redistribute economic activity within the city. Finally, I propose that to provide a comparative perspective, studies should examine cities and districts where sport venue projects were not developed and what happened in the areas of the proposed sites.

5.4 References

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